APPENDIX E

APPENDIX E

INSPECTION SCHEDULE

INSPECTION SCHEDULE

BADGER DISPOSAL OF WI., INC.
MILWAUKEE, WISCONSIN

MARCH 2006

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Section 1
INTRODUCTION

Badger Disposal of WI., Inc. (Badger Disposal) is committed to providing the highest levels of environmental protection and regulatory compliance in the operation of a permitted Hazardous Waste Storage Facility.

Waste handling equipment is complex, expensive and subject to breakdown if improperly maintained or used. Frequent inspections of equipment including emergency shut-offs is necessary to make certain it is being used safely, properly, and maintained appropriately. Written records of inspections serve as a basis for further refinement of waste handling practices. Inspection log data is needed so that plans can be made to prevent potential incidents before they happen.

1.1 Background

To conform with NR 680.06(3)(e) and 40 CFR 270.14(5) Badger Disposal has prepared the following Inspection Schedule for their waste storage facility located in Milwaukee, Wisconsin. Personnel involved in waste handling operations are in a potentially dangerous situation. Adequate supplies of personal protective equipment are essential. Emergency equipment must be in good working order. Timely inspections and prompt resupply are necessary to help prevent incidents that may result in exposure of plant personnel to unsafe conditions. This Inspection Schedule is necessary in order for the regulating agencies to determine compliance with NR 630.15 and 40 CFR 264.15.

A documented inspection program encompassing all areas of plant and equipment involved in waste handling operations and conducted by trained, experienced personnel works to minimize environmental and human health risks.

1.2 Purpose

This written Inspection Schedule describes the personnel, organization, and management policies and procedures for Badger Disposal's Milwaukee facility. The purpose of this schedule is to minimize the possibility of an accidental release of materials which may cause, or lead to, a discharge of hazardous materials to the environment or cause a threat to human health by maintaining the plant and equipment in good working order and providing a written base of experience for future refinement of waste storage activities.

A successful inspection schedule policy requires the full approval and support of management at a level of authority to commit the required resources to carry out this schedule to prevent threats to human health and to the environment.

During facility expansion, appropriate components of this plan will be phased into normal operating procedures. Once the facility has completed all proposed expansion, all components of the Inspection Schedule will be followed.

Section 2
GENERAL INSPECTION REQUIREMENTS

Inspection procedures are used to ensure that equipment and operational areas will not fail so as to endanger public health or the environment. Inspections are conducted on a regular schedule to minimize any such risk. Badger Disposal's inspection schedule provides a systematic approach to closely monitor these key components, how each component is inspected, and the appropriate frequency necessary for inspecting each component based on operational experience.

Badger Disposal's inspection schedule is based on the specific flow of the various processes. Areas covered include the following:

- Safety Equipment
- Emergency Equipment
- Security and Communication Equipment
- Loading/Unloading Areas
- Tanks, Piping, and Associated Equipment
- Container Management Areas
- Storage and Process Areas

The degree of detail within each inspection schedule varies in relation to the importance of the equipment to ensure the environmental integrity of the facility.

Inspections of the material storage areas and operational areas are conducted on a routine basis to ensure that no leakage, malfunctions, deteriorations, or operator errors are occurring or are likely to occur which may cause or lead to a release which may threaten the environment or human health. Inspection procedures consist of visual and/or operational checks, depending on the type of importance of the equipment. Records of these inspections are maintained in the Inspection Log and are retained at the facility for a period of at least three years from the date of inspection.

As shown in Appendix A, the Inspection Log identifies the following:

- Equipment or area to be inspected;
- Observations or checks which should be conducted;
- Date and time of the inspection;
- Name of the inspector;
- Notations of any observations made; and
- Copies of maintenance request forms.

Badger Disposal will remedy any deterioration or malfunction of equipment or structures in a timely manner in order to defer a human health or environmental hazard.

Section 3
INSPECTION SCHEDULE

The Inspection Schedule lists the type of equipment to be inspected, the specific items to be inspected, types of problems to look for and the frequency of inspection.

It is the responsibility of the Plant Manager to follow the inspection program that has been established by Badger Disposal. The Plant Manager is to complete each inspection as required. In his/her absence, an alternate inspector will be designated to assure an uninterrupted inspection pattern. This alternate will be someone who is familiar with the facility operations and equipment.

The frequency of inspection for all items is indicated on the inspection schedule and is based upon the rate of possible deterioration, probability of hazard, and applicable regulations. This schedule is to be used in conjunction with the Inspection Log. As you are completing the different portions of the Inspection Log read the schedule to make certain that you have checked every item listed. These inspections are summarized in Table 3-1.

TABLE 3-1

SUMMARY OF INSPECTION CHECKS

Area/Equipment	Check Items	Type of Concerns	Minimum Frequency
Safety Equipment	Five Minute Emergency Air Packs	Air Supply, Condition	Weekly
	Self Contained Breathing Apparatus	Air Supply, Condition	Weekly
	Organic Vapor Air Filter Respirators	Cleanliness, Cartridge Low Supply	As Needed, Weekly
	Safety Glasses / Safety Goggles	Scratched, Low Supply	As Needed, Weekly
	Steel Toe Boots	Condition, Low Supply	Weekly
	Safety Gloves	Condition, Low Supply	As Needed, Weekly
	Hard Hats	Worn, Cracked	Weekly
	Tyvek® Coveralls	Worn, Torn, Low Supply	As Needed, Weekly
	Uniforms	Worn, Cleanliness	Weekly
	Rain Slickers	Torn, Low Supply	As Needed, Weekly
	Eyewash Stations	Leaks, Low Pressure, Cleanliness, Accessibility	Weekly
	Safety Shower	Leaks, Low Pressure	Weekly
	First Aid Stations	Low Supplies	Weekly
Emergency Equipment	Emergency Lighting	Condition, Operable	Weekly
	Absorbent Materials	Supply, Dampness	Weekly
	Brooms and Shovels	Condition, Supply	Weekly
	Fire Blankets	Condition	Weekly
	Portable Fire Extinguishers	Charged, Properly Located	Weekly
	Dolly Fire Extinguishers	Charged, Properly Located	Weekly
	Electrical Pumps	Cleanliness, Operable	Weekly

TABLE 3-1
(Continued)
SUMMARY OF INSPECTION CHECKS

Area/Equipment	Check Items	Type of Concerns	Minimum Frequency
Above-ground Tank Farm Area	Tank Structure	Leaks, Flanges, Corrosion, Grounding	Daily
	Piping	Leaks, Flanges, Corrosion, Grounding	Daily
	Grounding Clamps	Loose, Damaged	Daily
	Containment Integrity	Leaks, Cracks, Housekeeping	Daily
	Absorbent Materials	Low Supply, Dampness	Daily
	Sump Pump	Condition, Operable	Daily
	Valves	Condition	Daily
	High Level Controls	On Bypass?	Daily
Container Storage Areas	General Housekeeping	Aisle Space, Open Lids, Leaks, Corrosion	Daily
	Roll-Off Containers	Deterioration, Securely Covered (if outdoors)	Daily
	Containment Integrity	Cracks, Deterioration, Dampness	Weekly
	Absorbent Materials	Low Supply, Dampness	Daily
Solids Work Area	General Housekeeping	Cleanliness, Corrosion	Daily
	Pumps	Deterioration, Leaks, Clogging	Daily
	Drum Conveyor	General Integrity	Daily
	Drum Auger and Conveyor Support Structure	Integrity, Missing parts	Daily
	Drum Crusher	Cleanliness, Leaks, Guards in Place	Daily
	Auger Assembly	Deterioration, Clogging, Operable, Guards in Place	Daily

TABLE 3-1
(Continued)
SUMMARY OF INSPECTION CHECKS

Area/Equipment	Check Items	Type of Concerns	Minimum Frequency
Blending Area	General Housekeeping	Cleanliness	Daily
	Mixing Tank	Corrosion, Leaks	Daily
	Piping	Corrosion, Leaks	Daily
	Pumps and Valves	Deterioration, Leaks, Clogging, Corrosion	Daily
	Drum Crusher	Cleanliness, Leaks, Guards in Place	Daily
	Absorbent Materials	Low Supply, Dampness	Daily
Repackaging Area (flammable bay, acids bay, base bay, oxidizer bay, reactives bay)	General Housekeeping	Cleanliness	Daily
	Repackaging Bays	Cleanliness, Placards	Daily
	Vermiculite Cyclone	Operable	Daily
	Ventilation Hood and Exhaust	Deterioration Operable	Daily
	Caustic Scrubber	Operable	Daily
	Carbon Adsorption Unit	Operable, Carbon Condition	Daily
	Container Storage Areas	Aisle Space, Leaks, Corrosion, Placecarding	Daily
	Containment Areas	Cracks, Deterioration, Dampness	Daily
Security	Facility Fencing	Damage, Vandalism	Daily
	Warning Signs	Damaged Missing	Daily
	Access Gate	Damaged, Motor Control	Daily
	Alarm System	Sensors, Alarms	Daily
	Surveillance System	Operable	Daily

TABLE 3-1
(Continued)
SUMMARY OF INSPECTION CHECKS

Area/Equipment	Check Items	Type of Concerns	Minimum Frequency
Communication	Two-Way Radios	Transmitter & Receiver, Battery Charger	Daily
	Internal Telephone Communications	Operable	Daily
Tanker Off-Loading and Loading Areas	Tanker Pad Area	Housekeeping, Sump Level, Cracks	Daily
	Pumps	Deterioration, Corrosion, Clogging, Leaks	Daily
	Filters	General Condition, Low Supply	Daily
	Piping	Leaks, Deterioration	Daily
	Grounding Clamps	Loose, Damaged	Daily
	Containment Integrity	Leaks, Cracks, Cleanliness	Daily
	Absorbent Materials	Low Supply, Dampness	Daily
Container Off-Loading and Loading Areas	Power Loading Dock Ramp	Condition, Operable	Daily
	Overhead Doors	Damaged, Locks, Operable	Daily
	Loading Dock Areas	Cleanliness, Cracks	Daily
	Sump	Condition, Sump Level	Daily
Operating Equipment	Fork Lifts	Cleanliness, Greased, Guards in Place	Daily
	Fork Lift Attachments	Cleanliness, Greased, Guards in Place	Daily
	Aerosol Tool	Cleanliness, Operable	As Needed, Weekly
	Sampling Equipment	Cleanliness, Supply	As Needed, Weekly

Section 4
REMEDIAL ACTION

4.1 Container Management Areas

If a container holding hazardous waste has apparent structural defects, shows signs of severe rusting, appears to be in poor condition, or begins leaking, Badger Disposal will immediately transfer the hazardous waste from the failed container to an overpack container that is in good condition. Otherwise, Badger Disposal will manage the waste consistent with the appropriate container management regulations.

4.2 Tank Management Area

If a tank holding hazardous waste is found to be structurally defective, severely rusted, or otherwise impaired, Badger Disposal will take appropriate action consistent with procedures defined in the Contingency Plan for removing materials from the tank. As Table 3-1 indicates, the containment integrity of each tank will be checked daily. This will include a visual inspection to determine any possible leaks, including possible leaks from the bottom of the tanks. The tank farm will be constructed with elevated, aboveground tanks for convenient bottom inspection.

4.3 Containment Structures

All containers and tanks located at the Badger Disposal facility employ secondary containment structures meeting the requirements of NR 640.13(1), NR 645.09, 40 CFR 264.175(b), and 40 CFR 264.194(d). Badger Disposal will remedy any deterioration or malfunction of equipment or structures identified by inspection in a timely manner so that the identified problem will not lead to an environmental or human health risk. Where a hazard is imminent or has occurred, available on-site emergency equipment will allow remedial actions to begin immediately. A list of emergency equipment is included in Appendix B.

Section 5
OPERATING RECORDS

Badger Disposal uses various operating records and logs at the facility to comply with the requirements of NR 630.31(1)(f) and 40 CFR 264.73. This information is recorded as it becomes available and is retained at the complex until ultimate closure, or for a period of not less than three years, or as otherwise required in accordance with appropriate Federal or state regulations.

5.1 Inventory Forms

The inventory forms identify the type of wastes received, quantity of waste, dates of receipt, the generator of the waste, the hauler of the waste, etc. Appendix C contains a copy of the inventory forms used at Badger Disposal.

5.2 Tank Farm Reports

Tank farm reports are compiled every day of operation and shows each inbound bulk shipment, its analysis, and location where the material was unloaded. Blending and outbound shipments are also recorded on this form. Appendix D contains a copy of the tank farm reports used at Badger Disposal.

5.3 Incident Reports

Incident reports which document any implementation of the Contingency Plan will be retained as necessary. This report will also be submitted to the Wisconsin Department of Natural Resources (WDNR) and the Environmental Protection Agency (EPA) Regional Administrator within 15 days of an occurrence as required by NR 630.22(2)9(c) and 40 CFR 264.56(j). The information on the Incident Report includes the following:

- Name and telephone number of reporter;
- Name, address, and telephone number of the facility;
- Date, time, and type of the incident;
- Name and quantity of materials involved, to the extent known;
- The extent of injuries known;
- The potential hazards to human health or the environment outside of the facility, when applicable;
- Estimated quantity and disposition of material(s) removed which resulted from the incident; and

·Other information deemed necessary at the time the report is prepared.

Appendix E contains a copy of the Incident Report for the Badger Disposal facility.

5.4 Inspection Logs

Inspection Logs are used to identify and record discrepancies found on any pieces of critical equipment within the Badger Disposal facility for which failure could lead to the endangerment of public health or to the surrounding environment. These records include the date and time of the inspection, the name of the inspector, and a notation of the observations made. When a deficiency is detected, it is recorded on the Inspection Log, and a Maintenance Request form is initiated. The maintenance request form along with the date and nature of any repairs or other remedial actions taken to correct the cited deficiency are included in the operating record. The inspection log, together with any associated maintenance request forms, are kept on file at the Badger Disposal facility for a minimum of three years. Copies of the Inspection Logs are included in Appendix A.

5.5 Maintenance Request Forms

Maintenance Request Forms are completed when, through inspection, a deficiency is identified which requires repair or attention by the maintenance department. A copy of the maintenance request form is forwarded to the maintenance supervisor for scheduling of repairs. When this work is completed, the maintenance supervisor signs the maintenance request form indicating completion of the required repairs. The signed maintenance request form is then placed with Badger Disposal's Operating Log.

5.6 Monitoring, Testing, and Analytical Data

Monitoring, testing, and analytical data for tank testing will be maintained at the Badger Disposal facility.

5.7 Closure Costs

Badger Disposal maintains a copy of the latest closure cost estimates for the facility in accordance with NR 685.07(2) and 40 CFR 264.142. A copy of the latest cost estimate is included with the closure plan, Appendix J, of this application.

Appendix A

INSPECTION LOGS

Tanker Truck and Loading Area Inspection Log

Date of Inspection:

Time of Inspection: Name of Inspector:

Check Item		Comments
Tanker • Integrity • Cracks		
Pumps • Corrosion • Deterioration • Clogging • Leaks		
Filters • General Condition • Low Supply		
Piping • Leaks • Deterioration		
Grounding Clamps • Loose • Damaged		
Containment Integrity • Leaks • Cracks • Cleanliness		
Hoses • Leaks • Cracks • Integrity		

SAFETY EQUIPMENT INSPECTION LOG

Month of Inspection: _____ Date of Inspection: _____

Time of Inspection: _____ Name of Inspector: _____

CHECK ITEM	Week One	Week Two	Week Three	Week Four	COMMENTS
Five Minute Emergency Air Packs • Air Supply • Condition					
Self Contained Breathing Apparatus (SCBA) • Air Supply • Condition					
Organic Vapor Air Filter Respirators • Cleanliness • Cartridges					
Safety Glasses / Goggles • Scratched • Low Supply					
Steel Toe Boots • Condition • Low Supply					
Safety Gloves • Condition • Low Supply					
Hard Hats • Worn • Cracked					
Tyveck® Coveralls • Worn • Low Supply					
Uniforms • Worn • Cleanliness					
Rain Slickers • Condition • Supply					
Eyewash Stations • Leaks, Low Pressure • Accessibility					
Safety Shower • Leaks, Low Pressure					
First Aid Stations • Low Supply					

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

EMERGENCY EQUIPMENT INSPECTION LOG

Month of Inspection: _____ Date of Inspection: _____

Time of Inspection: _____ Name of Inspector: _____

CHECK ITEM	Week 1	Week 2	Week 3	Week 4	COMMENTS
Emergency Lighting • Operable • Condition					
Absorbent Materials • Supply • Dampness					
Brooms and Shovels • Condition • Supply					
Fire Blankets • Condition • Stored Properly					
Portable Fire Extinguishers • Charged • Properly Located					
Dolly Fire Extinguishers • Charged • Properly Located					
Electrical Pumps • Cleanliness • Operable					

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

SECURITY AND COMMUNICATION SYSTEM INSPECTION LOG

Month of Inspection: _____ **Date of Inspection:** _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	Week One	Week Two	Week Three	Week Four	COMMENTS
SECURITY					
Facility Fencing • Damage • Vandalism					
Warning Signs • Damaged • Missing					
Access Gate • Damaged • Motor Control					
Alarm System • Sensors • Alarms					
Fire Alarm System • Sensors • Alarms • Pull Boxes					
Surveillance System • Operable					
COMMUNICATION					
Two-Way Radios • Transmitter • Receiver • Battery Charger					
Internal Telephone Communications • Operable					

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

OPERATING EQUIPMENT INSPECTION LOG

Week of Inspection: _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Fork Lifts • Cleanliness • Greased • Guards in Place						
Fork Lift Attachments • Cleanliness • Greased • Guards in Place						
Aerosol Tool • Operable • Cleanliness						
Sampling Equipment • Cleanliness • Supply						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

TANK FARM INSPECTION LOG

TANK NUMBER 1

Week of Inspection: _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Tank Structure • Leaks • Corrosion • Flanges • Grounding						
Piping • Leaks • Corrosion • Flanges • Grounding						
Condition of Valves						
High Level Controls						
Grounding Clamps • Loose • Damaged						
Containment Integrity • Leaks • Cracks • Cleanliness						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

TANK FARM INSPECTION LOG
TANK NUMBER 2

Week of Inspection: _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Tank Structure • Leaks • Corrosion • Flanges • Grounding						
Piping • Leaks • Corrosion • Flanges • Grounding						
Condition of Valves						
High Level Controls						
Grounding Clamps • Loose • Damaged						
Containment Integrity • Leaks • Cracks • Cleanliness						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

TANK FARM INSPECTION LOG

TANK NUMBER 3

Week of Inspection: _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Tank Structure • Leaks • Corrosion • Flanges • Grounding						
Piping • Leaks • Corrosion • Flanges • Grounding						
Condition of Valves						
High Level Controls						
Grounding Clamps • Loose • Damaged						
Containment Integrity • Leaks • Cracks • Cleanliness						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

TANK FARM INSPECTION LOG

TANK NUMBER 4

Week of Inspection: _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Tank Structure • Leaks • Corrosion • Flanges • Grounding						
Piping • Leaks • Corrosion • Flanges • Grounding						
Condition of Valves						
High Level Controls						
Grounding Clamps • Loose • Damaged						
Containment Integrity • Leaks • Cracks • Cleanliness						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

TANKER OFF-LOADING AND LOADING AREA INSPECTION LOG

Week of Inspection: _____

Time of Inspection: _____ Name of Inspector: _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Tanker Pad Area • Housekeeping • Sump Levels • Cracks						
Pumps • Corrosion • Deterioration • Clogging • Leaks						
Filters • General Condition • Low Supply						
Piping • Leaks • Deterioration						
Grounding Clamps • Loose • Damaged						
Containment Integrity • Leaks • Cracks • Cleanliness						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

CONTAINER STORAGE AREA INSPECTION LOG

Week of Inspection: _____

Time of Inspection: _____ Name of Inspector: _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
General Housekeeping • Cleanliness • Aisle Space • Open Lids • Leaks • Corrosion						
Containment Integrity • Cracks • Deterioration • Dampness						
Absorbent Materials • Low Supply • Dampness						
Dock Areas • Leaking Containers • Open Lids • Aisle Spacing • Dampness						
Power Loading Dock Ramp • Condition • Operable						
Overhead Doors • Operable • Locks Working						
Sump • Sump Level • Operable						
Unloading/Loading Docks • Cleanliness • Containment Integrity						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

BLENDING AND SOLIDS WORK AREAS INSPECTION LOG

Week of Inspection: _____

Time of Inspection: _____ Name of Inspector: _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
BLENDING AND SOLIDS WORK AREAS						
General Housekeeping • Cleanliness • Corrosion						
Drum Crusher • Cleanliness • Leaks • Guards in Place						
SOLIDS WORK AREA						
Drum Conveyor • General Integrity						
Drum Auger and Conveyor Support Structure • Integrity • Missing Parts						
Auger Assembly • Deterioration • Clogging • Operable • Guards in Place						
BLENDING AREA						
Mixing Tank • Corrosion • Leaks						
Pumps and Valves • Deterioration • Leaks • Clogging • Corrosion						
Piping • Corrosion • Leaks						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

REPACKING AREA INSPECTION LOG

Week of Inspection: _____

Time of Inspection: _____ Name of Inspector: _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
General Housekeeping • Cleanliness • Vermiculite Supply						
Repackaging Bays • Cleanliness • Placards • Ventilation Hoods Operable						
Vermiculite Cyclone • Operable • Cleanliness						
Carbon Adsorption Unit • Operable • Carbon Condition						
Caustic Scrubber • Operable						
Containment Areas • Cracks • Deterioration • Dampness						
Container Storage Areas • Cleanliness • Aisle Space • Open Lids • Leaks • Corrosion • Placecarding						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

5,500-GALLON ACIDS TANK INSPECTION LOG

Week of Inspection: _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Tank Structure • Leaks • Corrosion • Flanges • Grounding						
Piping • Leaks • Corrosion • Flanges • Grounding						
Condition of Valves						
High Level Controls						
Grounding Clamps • Loose • Damaged						
Containment Integrity • Leaks • Cracks • Cleanliness						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

5,500-GALLON BASICS TANK INSPECTION LOG

Week of Inspection: _____

Time of Inspection: _____ **Name of Inspector:** _____

CHECK ITEM	M	T	W	TH	F	COMMENTS
Tank Structure • Leaks • Corrosion • Flanges • Grounding						
Piping • Leaks • Corrosion • Flanges • Grounding						
Condition of Valves						
High Level Controls						
Grounding Clamps • Loose • Damaged						
Containment Integrity • Leaks • Cracks • Cleanliness						
Absorbent Materials • Low Supply • Dampness						

NOTE:

A copy of the Maintenance Request Form must be filled out immediately and attached to this form if any deficiencies are detected during this inspection. Copies of all Inspection Forms and Maintenance Request Forms must be submitted to the Maintenance Supervisor upon completion.

Appendix B

LIST OF EMERGENCY EQUIPMENT

EMERGENCY AND DECONTAMINATION EQUIPMENT		
Type of Equipment	Location	Use
Hand-held fire extinguishers	Warehouse entrances and exists.	To put out a larger than 3-foot-diameter fire and easily moved
Eye wash	Entrance to the warehouse and labpack building. Restrooms.	To flush splashed materials from eyes or face
Safety showers	Entrance to the warehouse and labpack building. Restrooms.	To wash off material that may be splashed on an employee
Hand-held air horn	All processing stations throughout the warehouse and labpack building	To sound alarm for emergencies
First aid stations	Laboratory, warehouse and labpack building	To handle non-serious injuries
Alarm actuators	All entrances and exits throughout the warehouse and labpack building	For security and for emergencies
Internal telephone communications	Warehouse and labpack building walls	To notify and instruct in the event of an emergency
Two-way radios	All areas of the warehouse and labpack building	To notify and instruct in the case of an emergency
Zorbal, sand, and/or other absorbent materials	Outside of the laboratory and throughout the warehouse and labpack building	To contain and cleanup spilled materials
Fire blankets	Outside the laboratory and throughout the warehouse and labpack building	To control and/or extinguish fires or put out flames on personnel
Emergency stretchers	Outside the laboratory and the office in the labpack building	To remove injured personnel

PERSONAL PROTECTIVE EQUIPMENT		
Type of Equipment	Location	Use
Five-Minute emergency air packs	Throughout the warehouse and labpack building	To supply 5 minutes of air for emergency escapes
Self contained breathing apparatus (air pack)	On the supply shelves in the warehouse and in the office of the labpack building	For emergencies or for confined-space work. Will supply 30 minutes of air
Organic vapor air filter respirators	Throughout the warehouse and labpack building	To minimize employee exposure
Safety glasses	Laboratory and labpack building	To protect the eyes
Safety goggles	Laboratory and labpack building	To protect the eyes
Safety boots	Laboratory and labpack building	To protect the feet
Safety gloves	Laboratory and labpack building	To protect the hands
Tyvek® coveralls	Laboratory and labpack building	To protect the body
Uniforms	Laboratory and labpack building	To protect the body

Appendix C

INVENTORY FORMS

BULK MATERIALS INVENTORY REPORT

FOR THE MONTH OF _____

Date	Generator Name	Generator Number	Waste Stream	Gallons	Hauler	Waste Code(s)	Manifest Number	Inventory Number	Tank #

H:\DATA\COMMON\WP\EOG_INV.FRM

DRUMMED MATERIALS INVENTORY REPORT

FOR THE MONTH OF _____

Date	Generator Name	Generator Number	Waste Stream	Gallons	Hauler	Waste Code(s)	Manifest Number	Storage Location	Drum Number

H:\DATA\COMMON\WP\EOG_INV.FRM

Appendix D

TANK FARM REPORTS

TANK FARM INVENTORY REPORT

TANK NUMBER _____ FOR THE MONTH OF _____

Day	Gallons	BTU/lb	%Cl	%H_2O	pH	Sp. Grav.	Comments
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

TANK FARM INVENTORY REPORT
Inbound Bulk Loads

Date _____

Generator Name	Generator Number	Gallons	BTU/lb	%Cl	%H_2O	pH	Tank #	Start	Finish	Total Time	Operator	Waste Stream

H:\DATA\COMMON\WP\EOG_INV.FRM

TANK FARM INVENTORY REPORT
Outbound Loads

Date _____

Hauler	Gallons	Shipper #	BTU/lb	%Cl	Tank #	Start	Finish	Total Time	Filter (Y/N)	Operator	Waste Stream	Disposal Facility

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TANK FARM REPORT
Outbound Comparisons

Tank Number_____ Date _____

SHIPPER NAME	TANK NUMBER	BTU		CHLORINE		H_20		pH		SP. GRAV.		COMMENTS
		OB	TANK	OB	TANK	OB	TANK	OB	TANK	OB	TANK	

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Appendix E

INCIDENT REPORTS

BADGER DISPOSAL OF WI. INC. INCIDENT REPORT

Incident Log No.

1. Site/location of incident _____

2. Date _____ Time _____ Duration _____

3. Description of incident _____

4. Amount & type of hazardous chemical substance(s) released:

   BADGER Waste Approval No. (if applicable): _____

5. Equipment involved: Drum _____ Small Container _____
   Tanker _____ Truck _____ Pump _____ _____
   Sump _____ Hose _____
   Other _____

6. Cause of incident:
   Mechanical/electrical failure _____
   Operator error _____
   Procedural failure _____
   Contractor-caused incident _____
   Incident beyond BADGER control _____
   Act of God _____
   Instrumentation _____
   Other _____

7. Hazardous chemical substance(s) released to: Air _____
   Water _____ Land _____ Groundwater _____
   Bldg Floor _____ Secondary containment _____
   Other _____
   Air/stack identification _____
   Water/describe receptor (e.g., outfall, sewer, stream) _____
   Soil/depth to groundwater _____

8 Estimate area (e.g., sq. ft., acres) affected: _____

9. Hazardous chemical substances released beyond BADGER property boundary, if any: _____

10. Agencies notified (contact, time, date, by whom):
    Wisconsin Division of Emergency Government _____
    WDNR _____
    Milwaukee Police Department _____
    Milwaukee Fire Department _____

BADGER DISPOSAL OF WI., INC. INCIDENT REPORT

11. Agencies' responses/inspections (name, time, date, comments): _____

12. List the materials released in quantities that exceed the reportable quantities of 40 CFR Part 302 (CERCLA hazardous substances) or 40 CFR Part 100 (oil): _____

13. List the materials released in quantities that exceed state reportable quantity levels: _____

14. Immediate corrective action taken: _____

    a) Contractor: _____
    b) Amount of waste collected for disposal: _____
    c) Method/vendor/location for waste disposal: _____

15. Incident damage (describe):

    a) Personal injuries: _____
    b) Environmental damage/permit excursion(s): _____
    c) Property damage: _____

16. Preventive measures: _____

17. Reported to State of Wisconsin by:

    Name/Title: _____
    Dept.: _____ Phone number: _____
    Time: _____ Time of State of Wisconsin response _____
    State of Wisconsin spill notification line - (800)943-0003

18. Additional Comments: _____

APPENDIX F

APPENDIX F

PERSONNEL TRAINING PROGRAM

PERSONNEL TRAINING PROGRAM

BADGER DISPOSAL OF WI., INC.
MILWAUKEE, WISCONSIN

MARCH 2006

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List of Appendices

Section 1
INTRODUCTION

Badger Disposal of WI., Inc. (Badger Disposal) is committed to providing a safe, clean and comfortable working environment for its employees. The purpose of this training program is to prevent personal injury, property damage and environmental degradation arising from the release of hazardous waste into the environment.

Badger Disposal's Personnel Training Program is designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment and emergency systems, including:

·Procedures for using, inspecting, repairing and replacing facility emergency and monitoring equipment;

·Communications and alarm systems;

·Shutdown of operations.

Training at Badger Disposal is an ongoing process. This training program has been established to make facility employees aware of the hazards in the work place, and how to conduct work in a safe manner. Badger Disposal is committed to a safe work place, safe environment and a safe community.

1.1 Objective

The management of hazardous wastes in an environmentally sound manner is a complex and difficult operation involving specialized apparatus and personal protective equipment. Personnel must understand waste management processes, the hazards that might be encountered, and the regulations that govern waste management operations. The objective of this program is to give Badger Disposal personnel this knowledge through a combination of classroom instruction and hands on experience.

Section 2
PERSONNEL TRAINING PROGRAM

The Badger Disposal Personnel Training Program is designed in accordance with the regulatory requirements of WAC NR 630.11. This program is used for teaching facility personnel material and waste management procedures (including Contingency Plan implementation) relevant to the positions in which they are employed.

There are established, comprehensive training programs for all levels of employees. These programs train each employee how to perform their duties in a safe manner. Hazardous waste management concepts have been incorporated into these training programs in order to insure compliance with the requirements.

Qualified instructors, trained in hazardous waste management procedures, conduct training sessions using:

- classroom lectures, and
- on-the-job training

Classroom lectures are the most effective method for group training. Classroom training includes study manuals, visual presentations, and problem solving related to facility operation. Sufficient time for question-and-answer periods and testing is planned so that the participants have an opportunity to clearly broaden and demonstrate their knowledge.

On-the-job training is utilized whenever practical. The General Manager is responsible for ensuring that all new employees learn correct procedures; perform them accurately, reliably, and efficiently; and make safety awareness a part of their duties. On-the-job training techniques include performing tasks after an initial briefing, having the employee complete the task, and evaluating the results.

No employee is allowed to perform unsupervised work at the facility until after successfully completing the introductory training program.

All employees at the Badger Disposal facility are trained in both introductory and job-specific training programs for materials and waste management. These programs are designed to provide training for

specific duties according to job function and job classification. The training program covers emergency response, so that employees are adequately prepared, as duties may dictate, to respond quickly and safely to various emergency situations. All employees annually undergo a training review. New employees assigned to the processing facility or to a new position at the facility begin the program immediately and are fully trained within six months. Badger Disposal personnel may not work in unsupervised positions until they have completed both classroom instruction and on-the-job training pertaining to their specific job duties.

2.1 Introductory Training

The introductory training program is designed to introduce new employees to the company and to operations at the facility, including hazardous waste management. All employees undergo an 8-hour introductory training session. This introduction is completed as expeditiously as possible, within at least two months of employment. Introductory training includes lectures, lesson examinations, a facility tour, hands-on training, booklets and manuals.

This training helps to ensure that the facility personnel are able to respond effectively to emergencies by familiarizing them with plant emergency procedures, emergency equipment, facility communication, and alarm systems. The instructor also gives guidance on procedures used in inspecting, repairing, and shutting down operations in case of emergencies.

2.2 Supplemental Training

Additional training session may be utilized as needed to define the handling problems associated with specific chemicals and the requirements for transporting, packaging, and processing materials on the job. Classes are also conducted for appropriate facility personnel on:

·Proper driving and use of forklifts;

·Proper use and maintenance of fire extinguishers and fire fighting equipment;

·Repair and maintenance of material-handling equipment;

·Inspection of facilities and emergency and monitoring equipment;

·Proper use, repair, and maintenance of facility emergency and monitoring equipment;

·Proper use of the alarm system;

·Spill cleanup, and Basic first aid and cardiopulmonary resuscitation (CPR)

2.3 Annual Training Review

The annual training program at Badger Disposal is designed to meet job-specific training needs according to job duties. All employees will be required to participate in the annual training program review to maintain proficiency, to learn new techniques and procedures, to become familiar with new regulatory requirements, and to reinforce safety and quality consciousness.

2.4 Drills

Badger Disposal's drill program is designed to test employees on their emergency response reactions and the timelines of response. Drills are also used to assess the response of the emergency coordinators and the emergency response team. Drills are performed under simulated emergency situations.

After a drill, an assessment is performed as to the response of all involved. If necessary, a general meeting is held with the employees to discuss the results and take any action necessary to improve performance.

2.5 Specialty Training

This training consists of short courses on specific subjects such as Permit-Required Labeling, Hazardous Materials Handling, etc. The purpose of these courses is to address the specific needs of individual job assignments.

These training courses are also used to give employees a more in-depth study of certain generic subjects such as First Aid & CPR, Emergency Response, fire fighting, Fork Lift training, Emergency Procedures, and experienced and new members to (re)learn the techniques necessary to control and response to an emergency.

2.6 Training Documentation

Badger Disposal will maintain training records on current personnel until closure of the facility. Records of former employees are also maintained at the facility and kept for three years from their last date of employment.

The following documents and records are maintained at the facility:

·Employee name and job title for each position at the waste recycling management facility;

·Written job description of each position, including the requisite skill, education, and other qualifications necessary, and the duties of facility personnel assigned to the position;

·Written description (with dates) of the type and amount of both introductory and continuous training provided to each person; and

·Records which document employee training and/or job experience required by this program.

2.7 Training Program

All Badger Disposal employees are required to be trained for their job-specific activities. No individual is allowed to work in a position until they have successfully completed the elements of the training program applicable to his/her specific position. In addition, all employees are required to participate in the annual review of the training program.

All new processing employees are required to undergo an introductory 8-hour training session to introduce the company, operations at the facility, and materials handled at the facility. This orientation is completed during the first six months of employment.

2.8 Emergency Response Training

Comprehensive specialized training is provided so that each individual at the facility is adequately prepared to response quickly and safely to various emergency situations. Each person is required to become familiar with the facility's Contingency Plan. Emergency training includes:

·Identifying duties of the Emergency Coordinator, alternates and others;

·Discussing the types of emergency situations that could occur at the facility;

·Reviewing emergency communication systems and evacuation procedures;

·Identifying primary and alternative evacuation routes;

·Identifying the location of emergency equipment: alarms, first-aid stations, eye-wash stations, fire fighting equipment, etc.

Following the classroom lecture on the general Contingency Plan training, each individual is tested in specific duties and responsibilities related to an emergency situation in the area. Emergency response training also include discussion of chemical properties of the materials handled and the selection of proper fire extinguishers for various types of fires.

2.9 Management Training Responsibilities

The General Manager is responsible for teaching employees about facility materials and waste management procedures (including Contingency Plan implementation) relevant to their positions. He/she is required to review and update the training programs at lease once every six months. The trainer is assisted by the Plant Manager who is responsible for facility safety.

The General Manager is responsible for ensuring that all individuals are trained in accordance with the requirements of this training program. This person assists in developing the training program content and format.

Section 3

JOB TITLES AND DESCRIPTIONS

Personnel at Badger Disposal carry out either administrative and/or operational functions or both. The administrative personnel including the Approvals Coordinator and Receptionist/Computer Operator receive training for administrative functions, the General Manager, Plant Manager, Warehouse Technicians and Laboratory Chemist receive training for operational functions.

Operating personnel at Badger Disposal are instructed in materials and waste management procedures according to their job classifications. The following subsections describe and identify job classifications and duties associated with the positions at the facility.

3.1 Approvals Coordinator

The Approvals Coordinator is the customer's link to the waste facility and the facilities contact with other waste facilities. All paperwork for incoming material flows through the waste coordinator so it can be tracked and processed according to the waste approval procedure. Paperwork for waste being sent for recycling or disposal from the facility is the responsibility of the waste coordinator. Approvals for outgoing wastes are secured and approvals for incoming are relayed to the customer by the Approvals coordinator. The scheduling of incoming and outgoing waste shipments is handled by the Approvals Coordinator. Requirements for a Approvals Coordinator include:

·B.S. in chemistry or related field or equivalent experience.
·Knowledge of regulations including RCRA and HMTA.
·Knowledge of waste analysis, disposal technologies, and waste facilities.
·Experience in customer relations.
·Excellent communication skills.
·Knowledge of computer systems operation.

3.2 General Manager

The General Manager oversees all aspects of the facility operation. Waste approval, operational procedures, safety, training and liaison with customers, personnel and regulatory agencies are the responsibility of the General Manager. The General Manager coordinates incoming waste shipments, processing schedules and outgoing waste shipments. Financial, personnel and regulatory concerns are

handled by the facility manager. Facility record keeping and compliance must be maintained by the General Manager. Requirements for a General Manager include:

·B.S. in chemistry or related field.
·Extensive experience in the hazardous waste industry.
·Extensive knowledge of regulations including RCRA, OSHA, HMTA.
·Extensive knowledge of chemical hazards and reactivity.
·Knowledge of first aid and emergency response.
·Experience with permitting and working with regulatory agencies.

3.3 Plant Manager

The Plant Manager directly oversees all activities within the storage and processing area. The completion of all projects and work schedules assigned by the General Manager are the responsibility of the Plant Manager. The Plant Manager ensures that all safety rules and operating procedures are followed by all process workers at all times and that each worker has adequate on-the-job training for the tasks assigned. Facility inspections are conducted by the Plant Manager, recorded and relayed to the General Manager. Incoming shipments are inspected and sampled by the Plant Manager and his staff. Requirements for a Plant Manager include:

·H.S. education with some college preferred.
·Experience in worker supervision.
·Experience with equipment used at the facility.
·Basic knowledge of chemistry and waste regulations.
·Familiarity with computers.

3.4 Warehouse Technician

Warehouse Technicians are responsible for completing tasks assigned by the Plant Manager in a safe and timely manner. Correct use, care and operation of equipment are expected. Safety rules and operating procedures must be followed at all times. Reporting of any unsafe working conditions, violations of operational procedures or equipment failures is the responsibility of all Warehouse Technicians. Warehouse Technicians will occasionally pick up materials from customer locations and are expected to conduct themselves in a professional and personable manner. Trained Warehouse Technicians will be

expected to assist the Laboratory Chemist in the analysis of samples. Requirements for a Warehouse Technician include:

·H.S. education.
·Familiarity with equipment used at the facility.
·Valid driver license.

3.5 Receptionist/Computer Operator

The Receptionist/Computer operator will handle all secretarial duties at the facility. These duties include switchboard control, data entry, word processing, report creation, travel arrangements and customer reception. The computer operation and report creation will require training to learn all aspects of the facility operation. Requirements for a Receptionist/Computer operator include:

·H.S. education.
·Knowledge of computer.
·Experienced typist.
·Excellent communications skills.

3.6 Laboratory Chemist

The Laboratory Chemist will be responsible for all analyses performed at the facility. The analyses include all those mentioned in the facility waste analysis plan. Documentation and record keeping of analytical data and samples is the responsibility of the Laboratory Chemist. All work performed by the Laboratory Chemist is directed by the General Manager. Requirements for a Laboratory Chemist include:

·A.S. in chemistry minimum with B.S. preferred.
·Knowledge of basic analytical procedures and tests.
·Working knowledge of all lab equipment.
·Excellent communication skills.
·Knowledge of computer systems operation.

Appendix A

INTRODUCTORY TRAINING PROGRAM OUTLINE

INTRODUCTORY TRAINING PROGRAM OUTLINE

1. Complete Physical

2. Complete Facility Tour

3. Company Policy Guides

   A. Facility Operations
   B. Maintenance
   C. Decontamination of Equipment and Personnel

4. Manifesting Guide

5. General Safety Guide for Facility Maintenance, Processing, Shipping, Receiving, Laboratory Personnel, and Drivers

   A. Personnel Protective Clothing and Equipment
   B. Health Effects
   C. Physical Safety

7. Nature and Characteristics of Materials and Waste

8. Overview of Federal and State Rules and Regulations

9. Transportation of Waste

10. Review of Facility's Contingency Plan

    A. Communication System
    B. Evacuation Procedures
    C. Location of Emergency Response Equipment
    D. Location of Utility Shutoffs

11. Handling, Inspection and Compliance related to permit requirements.

Appendix B

TRAINING FOR ADMINISTRATIVE PERSONNEL

TRAINING FOR ADMINISTRATIVE PERSONNEL

1. General company policies and procedures
2. Facility operations orientation
3. Company organization, department functions, personnel and personnel roles
4. Safety equipment awareness and operation
5. Fire protection and control
6. Emergency procedures, including communication and evacuation routes
7. Recordkeeping requirements

Appendix C

WAREHOUSE PERSONNEL TRAINING PROGRAM OUTLINE

WAREHOUSE PERSONNEL TRAINING PROGRAM OUTLINE

1. Personnel Safety Training

   A. Physical/chemical characteristics of wastes
   B. Health effects
   C. Protective clothing and equipment

2. Release Prevention and Response

   A. Contingency Plan
   B. Emergency response and evacuation

3. Decontamination Procedures

4. New regulations, developments and techniques applicable to waste handling, recycling, treatment and transportation

5. Facility operation

   A. Using and inspection emergency systems and monitoring equipment
   B. Container Management
   C. Proper operation of vehicles and process equipment
   D. Preventative maintenance
   E. Shutdown of operations

6. Waste analysis

   A. Waste Material Data Sheets
   B. Material Safety Data Sheets
   C. Sample collection
   D. Screening Procedures
   E. Recordkeeping

APPENDIX G

APPENDIX G

ENDANGERED SPECIES CORRESPONDENCE

BADGER DISPOSAL
Badger Disposal of WI, Inc.

October 31, 2005

State of Wisconsin
DNR
Endangered Resources Impact Review
Bureau of Endangered Resources
P.O. Box 7921
Madison, WI 53707-7921

Dear Sirs,

This letter is to formally request an environmental review for our property located at 5611 West Hemlock Street, Milwaukee, WI 53223. Enclosed is a review request form as well as a map of the site location.

If you require any additional information or have any questions about this request please contact me.

Sincerely,
Badger Disposal of WI., Inc.

Kandylee Schmit
Compliance Officer

5611 W. Hemlock St. Milwaukee, WI 53223
866-271-0961 • 414-760-9175 • Fax: 414-760-9189 • www.badgerdisposal.com

State of Wisconsin
Department of Natural Resources
Endangered Resources Impact Review
Bureau of Endangered Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Wisconsin Natural Heritage Inventory
Endangered Resources (NHI) Review Request

Form 1700-047 (R 8/05)

Notice: To obtain a review of your project, you are required to provide all information requested on this form. Completion of this form is required for your request to be processed. Personal information collected will be used for administrative purposes, and may also be made available to requesters under Wisconsin's Open Records law [ss. 19.31-19.39, Wis. Stats.].

Wisconsin's Natural Heritage Inventory (NHI) consists of a combination of historic records and ongoing survey information on rare plants, animals, and natural communities in an integrated system of computer databases, maps, and paper files. The Bureau of Endangered Resources provides this information, along with project timing, location advice and survey recommendations for resource management activities.

Instructions: The following materials are required to process the request. Send to the address listed above.

- Letter formally requesting environmental review
- Completed, signed form
- **Map(s)** delineating the project area (preferably a USGS quadrangle map)
- Relevant attachments, e.g. point discharge information

Prior to filling out this form, you must answer these required questions:

1. Is the information being requested for a commercial or residential development project? ☑ Yes ☐ No
2. If Yes to 1, does the applicant own the property or have landowner consent to request this review? ☑ Yes ☐ No
   - If Yes to 2, please fill out the following information and return the form to Bureau of Endangered Resources.
   - If No to 2, refer to the NHI Online Database: dnr.wi.gov/org/land/er/nhi/NHI_ims/onlinedb.htm. Please note the online database is not intended for regulatory review, but is intended for general information and planning purposes. More specific information requires landowner consent.

Applicant Requesting Natural Heritage Inventory Information (all correspondence and invoices will be sent to this person)

Name	Organization		
Henry KRIER	BADGER Disposal of WI, INC.		
Street Address	**City**	**State**	**ZIP Code**
5611 West Hemlock Street	Milwaukee	WI	53223
Telephone Number	**Fax Number**	**E-Mail Address**	
414-760-9175	414-760-9175	henry@badgerdisposal.com	

Individual / Organization / Agency Proposing Project (if different from above)

Name	Organization		
Street Address	**City**	**State**	**ZIP Code**
Telephone Number	**Fax Number**	**E-Mail Address**	

Location of Proposed Project – Remember to attach a topographic or plat map delineating the project area

County(ies) Milwaukee

Township	Range	(circle one)	Section(s)
8 N	21	(E) / W	SW 1/4 of Sec. 14
N		E / W	
N		E / W	

Proposed Project Information

What is the proposed date you intend to begin work on the project? Report development presently 10/31/05

Briefly describe the project and the type of disturbance associated with the project. For point source discharges into waterbodies please indicate the discharge location, nature of any increase in discharge, and the expected mixing zone. Attach additional pages as necessary.

New Construction of buildings on property at:

5611 W. Hemlock Street
Milwaukee, WI 53223

Proposed Project Information (continued)

Briefly describe current land use and habitat types in the project area (i.e. 50% in row crops and 50% semi-open oak woods or project area entirely within active soybean field).

Hazardous Waste Transfer / Storage facility.

List any waterbodies such as rivers, intermittent streams, lakes, or wetlands that are within or near the project area. List any known or suspected impacts to these waterbodies as a result of the project.

N/A

List any reports that have been prepared to describe the habitat that will be affected by the project (i.e. wetland delineation, habitat reconnaissance surveys, rare species surveys, etc.).

N/A

List all other Endangered Resources / NHI reviews that have been submitted or conducted for a different phase, portion, or other alternative(s) relating to this project. List ER log # and date (i.e. 00-132 and 2/10/2002) or any other correspondence.

Log # 94-211 Completed for this Site 7/14/1994

List all permits, licenses, or regulatory approvals you have or plan on applying for, or already have received as part of this project:

Permit, License or Approval	Contact Person for Permit, etc.	Contact Person's Agency, District or Bureau	Application Status
6026	Pat Brady	WI DNR Milwaukee, WI	☐ will be applying for ☐ have applied for ☑ have received
			☐ will be applying for ☐ have applied for ☐ have received
			☐ will be applying for ☐ have applied for ☐ have received

Applicant Certification

To the best of my knowledge the information above is complete and accurate. I understand that the specific location of endangered resources is sensitive information and will use the material provided solely for analysis and review of the above project. I agree not to include exact locations of endangered resources in any publicly disseminated documents. I agree to contact the Bureau prior to publishing any information provided by the Wisconsin Natural Heritage Inventory and to credit the Bureau of Endangered Resources as the source of the material.

I also agree to pay, within 30 days of receipt of NHI information, the fees charged by the Department. There is a charge of $20/hour (with a minimum fee of $60) for non-DNR requesters. [Refer to Chapter NR 29 Wisconsin Administrative Code for more information on the fee structure and billing exemptions.]

Applicant Signature	Date Signed	Applicant Name (please print)
Henry J. Krier	10/31/05	Henry Krier

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Scott Hassett, Secretary

101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921
Telephone 608-266-2621
FAX 608-267-3579
TTY 608-267-6897

December 27th, 2005

Henry Krier
Badger Disposal of WI, Inc.
5611 West Hemlock Street
Milwaukee, WI 53223

SUBJECT: Endangered Resources Review (ERIR Log # 05-305)
Proposed Badger Disposal Expansion Project, Milwaukee County

Dear Mr. Krier,

The Bureau of Endangered Resources has reviewed the project area described in your review request received November 2, 2005 for the proposed Badger Disposal Expansion Project in the City of Milwaukee.

Our Natural Heritage Inventory data files contain the following information for the project site located in T8N R21E Section 14 in Milwaukee County. In addition to the proposed project site, endangered resource information is provided for an area within two miles of the project's location (and five miles for aquatic species). This information is provided so impacts to nearby endangered resources can be assessed and to assist in determining which rare species may occur in the project's impact area. If the described habitat types exist in the project's impact area, then species that occur nearby may be present at the proposed location. Endangered resources documented within and around the project area include:

- **Butler's gartersnake** (*Thamnophis butleri*), a snake listed as Threatened in Wisconsin, prefers wet-mesic prairies, marshes and adjacent grassy and vacant areas, requiring a moderately open to open canopy habitat, preferably with both upland and wetland habitat. The breeding season occurs from late March to late April and young are born in mid to late summer.
- **Handsome sedge** (Carex formosa), a plant listed as a Federal Species of Concern and Threatened in Wisconsin, prefers rich mesic woods, especially alluvial terraces or where dolomite is near the surface. Flowering occurs throughout the month of June. Optimal identification period is from mid-June to mid-July.
- **American gromwell** (Lithospermum latifolium), a plant of Special Concern in Wisconsin, prefers upland hardwood forests, often with dolomite near the surface. Blooming occurs throughout the month of June. Optimal identification period is from early June to late August.

Endangered and Threatened species are provided protection under the Wisconsin Endangered Species Law (29.604 State Stats.). Special Concern (Watch) species are those about which some problem of abundance or distribution is suspected but not yet proved. The main purpose of this category is to focus attention on certain species before they become endangered or threatened.

Comprehensive endangered resource surveys have not been completed for the project area. As a result, our data files may be incomplete. The lack of additional known occurrences does not preclude the possibility that other endangered resources may be present.

Follow-up Actions:

1. Based on the information submitted to our office, we have evaluated the proposed site according to the criteria of the Butler's Gartersnake Conservation Strategy (http://dnr.wi.gov/org/land/er/review/Butler). Due to the size and quality of suitable Butler's gartersnake habitat, the site was classified as containing a portion of a potential Tier 2 Site (Site of Moderate Conservation Value). As a result, the site is covered under the broad *Incidental Take Authorization for Tier 2 Butler's Gartersnake sites* (http://dnr.wi.gov/org/land/er/take/TierOneButlers.htm). Per the authorization, no conservation measures are required for the state-listed snake and any take that results from the proposed project is permitted. However, please note that we strongly encourage that the voluntary measures described within the above Strategy be incorporated into the project design to benefit the snake at the site. The measures can be found at http://dnr.wi.gov/org/land/er/review/butler/cons.htm.

   This letter serves as notice that the proposed project as described in your environmental review request of November 2, 2005 is covered under the broad *Incidental Take Authorization for Tier 2 Butler's Gartersnake sites* authorized in October 4, 2005.

2. The plant species listed above are from records within the vicinity of the project area. It is unlikely that habitat exists at your site for these species. However, if you suspect that habitat exists for any of these species, please contact our office for additional guidance on survey protocols and avoidance measures.

The specific location of endangered resources is sensitive information that has been provided to you for the analysis and review of this project. Exact locations should not be released or reproduced in any publicly disseminated documents.

This letter is for informational purposes and only addresses endangered resource issues. This letter does not constitute Department of Natural Resources authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the Department.

Please contact me at (608) 264-8968 if you have any questions about this information.

Sincerely,

Andrew P. Galvin, ER/6
Endangered Resources Program

cc: Jen Jerich – SER/ Milwaukee
Jim Ritchie – SER/ Milwaukee
Susan Eichelkraut – SER/Sturtevant
Owen Boyle – SER/Milwaukee
Bob Hay – ER/6

dvgn-05-305.doc

APPENDIX H

APPENDIX H

PREPAREDNESS AND PREVENTION PLAN

PREPAREDNESS AND PREVENTION PLAN

BADGER DISPOSAL OF WI., INC.
MILWAUKEE, WISCONSIN

MARCH 2006

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Section 1
INTRODUCTION

1.1 Background

To conform with WAC NR 630.21 and 40 CFR 270.14(b)(8), Badger Disposal of WI., Inc. (Badger Disposal) has prepared the following Preparedness and Prevention Plan for their waste transfer and processing facility in Milwaukee, Wisconsin.

The Badger Disposal facility is designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to the air, land or surface waters which could be harmful to human health or the environment. Badger Disposal also maintains policies which include safety and operational guidelines which are also protective of human health and the environment including a policy which restricts smoking to only non-operational areas of the facility.

1.2 Description

Badger Disposal's Preparedness and Prevention Plan describes the design, operations, and maintenance procedures incorporated by Badger Disposal to minimize the possibility of a fire, explosion, or other unplanned occurrence which could impact the health and safety of those personnel at the facility or in the immediate areas surrounding the facility.

A successful preparedness and prevention policy requires the full approval and support of management at a level of authority to commit the required resources to carry out this plan to prevent threats to human health and the environment.

Section 2
DESIGN

The Badger Disposal facility is designed in accordance with local building codes and requirements of 40 CFR 264 and WAC NR 630, NR 640 and NR 645 for containment. Detailed drawings for tanks are included within Attachment P. In addition, floor plans and building elevations for the storage and process areas of this facility are also included within Attachment P of this plan submittal.

2.1 Aboveground Tanks

The four 12,000 gallon aboveground storage tanks within the Badger Disposal facility are constructed of carbon steel. The tanks are situated within a lined and coated concrete containment area. This containment area is canopied to prevent precipitation run-on and provides for approximately 25,960-gallons in accordance with WAC NR 645.09 and 40 CFR 264.193 (see Appendix A). In addition, the two 5,500 gallon aboveground storage tanks located inside the lab pack building are situated within separate lined and coated concrete containment areas. These containment areas individually provide for approximately 5,650-gallons. Each storage tank is designed with pressure vacuum relief valves, pressure regulators and vents, metal seated fire rated valves, and flame arresters. Microprocessor based programmable logic controllers are used to monitor and control the entire process. Some of the specific parameters monitored include: oxygen concentration, high tank levels, low tank levels, system pressure, temperature nitrogen pressure, hydraulic system conditions, and feed rates. Safety parameters included in the system and integrated into the control systems prevent operations if any of the parameters monitored by the computer system are exceeded or otherwise outside the established limits. Emissions from all tanks and process chambers are collected by a manifold pipe and conveyed to a vapor recovery system (VRS). All tanks are appropriately labeled per state and local fire marshall requirements.

2.2 Piping

Facility piping will be constructed to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water which could threaten human health or the environment. All transfer piping is totally contained by encasement or routed in a contained overhead trough system with leak detection capabilities. Pipelines are contained such that any leakage is returned to a contained area.

2.3 Building Construction

The warehouse/processing building at the Badger Disposal facility is constructed to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil or surface water which could threaten human health or the environment. All containment areas are designed in accordance with the requirements of WAC NR 640 and NR 645. The warehouse/process building is constructed of 12-inch thick outside walls and 6-inch thick inside walls. Where there are exits to non-containment areas, dike walls are constructed at least 6-inches high and 10-inches thick.

2.4 Electrical Systems and Equipment

Electrical systems and equipment at Badger Disposal are designed to minimize the possibility of a fire, explosion or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water which could threaten human health or the environment. All electrical systems and equipment meet the applicable code requirements. All electrical systems and equipment are explosion proof in operational areas throughout the facility. These operational areas include the labpack building and the process storage building.

Section 3
EQUIPMENT

3.1 Required Equipment

To conform with 40 CFR 264.32 and NR 630.21 (2), the Badger Disposal facility will be equipped with an internal communications system capable of providing immediate notification to facility personnel; 2-way radios and telephones capable of summoning emergency; fire control equipment; water at adequate pressure and volume to supply water hose streams; and other kinds of safety and emergency equipment deemed necessary by Badger Disposal. A complete list of all safety and emergency equipment and a drawing showing their locations is provided in Appendix B.

3.1.1 Alarm System

The Badger Disposal facility will be equipped with an alarm system. This system will be used in the case of emergency or emergency drill. The alarm will allow instruction and information to be supplied to plant personnel. Appendix B shows the locations of activators for the alarm system.

3.1.2 Communication Devices

Badger Disposal utilizes three forms of communications in the event of an emergency. These include telephones, radios, and an alarm system. Appendix B shows the locations of alarm activators and facility telephones. Two-way radios are carried by all Badger Disposal supervisors. In the event of an emergency, any or all of these devices will be used to alert employees and notify the proper personnel, agencies and/or emergency response teams.

3.1.3 Fire Extinguishers

Appendix B shows the locations of all hand-held and portable fire extinguishers which would be used, when necessary, in the case of an emergency. In addition to these fire extinguishers, the building storage/process areas will be equipped with an automatic aqueous film forming foam (AFFF) fire suppression system.

3.1.4 Water Supply

Locations of fire hydrants located on or near the Badger Disposal facility are shown on Sheets 1 and 2 in Attachment P. The City of Milwaukee has the responsibility of maintaining these fire hydrants in operable condition.

3.2 Testing and Maintenance of Equipment

All facility communication and alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, is inspected, tested and maintained as necessary to assure its proper operation in the event of an emergency. Badger Disposal's inspection schedule is described in the Inspection Plan. In addition, records of these inspections and any repairs or other remedial actions performed on inspected items are included in the Inspection Log pursuant to WAC NR 630.15(4) and 40 CFR 264.15(d).

Section 4

ACCESS TO COMMUNICATION DEVICES

Since operations at Badger Disposal's facility include handling of hazardous wastes, all employees involved with mixing, blending, combining, or otherwise handling of hazardous wastes shall have immediate access to internal and/or external alarm and communication devices. It is Badger Disposal's policy not to allow any employee to work on-site without at least one other employee present.

Section 5

AISLE SPACING REQUIREMENTS

Badger Disposal maintains aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment and decontamination equipment to any area of the facility operations in an emergency. Specific aisle spacing maintained at the Badger Disposal facility include three-foot aisle spacing between rows of drums and at least six-foot wide aisles at all exit routes to all doorways.

The three-foot aisle spacing of hazardous waste drums allow direct access to each and every drum in case of emergency. It is Badger Disposal's policy to keep aisle ways clear at all times. Should a drum be noted to be leaking, a hand drum dolly will be used to remove the drum from the storage area. The three-foot aisle spacing provides ample room to wheel the dolly down an aisle and remove a drum from any given row of drums.

Section 6

SERVICE ARRANGEMENTS

To comply with WAC NR 630.21 (6) and 40 CFR 264.37(a), Badger Disposal issues a copy if its most current Contingency Plan, hazardous materials description and operations information to the local police, fire department and hospital. These groups are also invited for a site visit in order to familiarize them with plant operations. Copies of letters which were submitted, via certified mail, to local police, fire and hospitals are included in Appendix C of the Contingency Plan.

Section 7

LOADING AND OFF-LOADING OPERATIONS

7.1 Containerized Materials

Badger Disposal typically receives containerized materials by box trailer and unloads these materials on the receiving dock. The receiving dock is constructed of reinforced concrete and is designed to meet the secondary containment requirements of WAC NR 640.13(1) and 40 CFR 264.175(b)(3). Should a container being unloaded spill or rupture, it would be entirely contained within the secondary containment system.

7.2 Liquid Bulk Materials

Bulk liquid materials are received or shipped by tanker trucks or vacuum trucks at the tank farm loading and off-loading pad. The tank farm pad is constructed of reinforced concrete and is designed to fully contain any spillage resulting from the loading/off-loading operations. Pumps and filters are provided with secondary containment to minimize any spillage resulting from their operation.

The Badger Disposal loading/off-loading pad is canopied to minimize run-on from precipitation. Any material which may accumulate on this pad, either from spillage or precipitation, is removed using a portable pump. Collected materials are conveyed to the fuels process area, pumped into a tanker truck and/or sent off-site for disposal. Sheet 12 of 18 shows the loading/off-loading pad.

7.3 Solid Bulk Materials

Badger Disposal will receive bulked solid materials for storage at the complex. These shipments can arrive in covered roll-off boxes or other vehicles. Movement of these materials will occur on a reinforced concrete pad.

Any material which may accumulate on this pad from either spillage or precipitation will be removed using portable pumps or by other appropriate methods. Collected materials will be conveyed to the fuels program and/or shipped off-site for disposal.

Section 8
EQUIPMENT FAILURE AND POWER OUTAGE

8.1 Equipment Failure

In the context of Badger Disposal's facility operations, equipment failure would be defined as a leak or rupture of a tank, pipeline, or container, or as a spill occurring during tank truck loading or off-loading.

Failure in this system would most likely be caused from leaking storage tanks, leaking valves or pipe joints, or damaged pumps. Since this equipment is located in paved and diked areas, the possibility of this type of failure becoming environmentally damaging is minimal.

Combining of incompatible wastes could be another cause of failure. Due to the fact that this facility prescreens all incoming wastes, the possibility of this type of failure is also minimized.

Improper blending of wastes could also be considered a process equipment failure. However, because this material would simply be retained on-site for subsequent reblending, no adverse environmental consequences would result.

Visual inspection of the operations and equipment will detect any failures present. Since all of the equipment used is above ground and in paved areas, any leaks or ruptures will easily be detected.

Equipment failures which may occur would probably result in a short-term discharge of liquids into a diked area. These liquids would be pumped to a container or tank. Provisions have been made to effect an immediate cleanup of spills or discharges which might occur. Appendix C contains Badger Disposal's Spill Prevention Control and Countermeasure Plan (SPCC Plan).

In the event of leakage or rupture, the faulty equipment would easily be identified by visual inspection. Once identified, the faulty equipment will be immediately taken out of service. If the quantity contained in the faulty equipment merits removal, any waste (or product it may contain) will be removed and directed into containers or available storage tank space on-site.

8.2 Preventative Actions

Badger Disposal has several preventative actions in place to minimize the possibility of failure and adverse impacts of failure. These actions include:

- Incoming materials are prescreened prior to acceptance as described in the Waste Analysis Plan. Accepted materials are then directed into an incoming material storage tank or into the container storage area.
- Employee training and immediate availability of personnel protection equipment on-site contribute to immediate response to possible failures. Appendix C contains Badger Disposal's SPCC Plan.
- Loading and unloading areas are paved and diked in a manner to preclude runoff from entering surface or groundwater.
- Daily visual inspections and regular preventative maintenance of all equipment aid in the prevention of failures.

8.3 Power Failure

In the event of a power outage, no environmental hazards would result because only pumps would cease to operate. All materials would continue to be contained. If for some unanticipated reason auxiliary emergency power is required, Badger Disposal will obtain an emergency power generator.

8.4 Remedial Action

In the event any crack, leak, significant wall thinning, equipment process malfunction, or the potential for a hazardous waste release is discovered, Badger Disposal will contain, remove, decontaminate, repair and/or install to full working order, any piece of hazardous waste equipment, vessel, container, containment structure, and associated controls.

If a situation does occur which is beyond the capacity of immediate internal correction, Badger Disposal will call on private contractors to render immediate emergency assistance. Further remedial action and emergency procedures are described in the Contingency Plan.

Section 9
RUNOFF PREVENTION

9.1 Runoff Prevention Design

Contaminated runoff would most likely be caused by equipment failure in the form of excess precipitation infiltration, leaking storage tanks, leaking valves or pipe joints, or damaged pumps. Since all of the above equipment is located in paved and diked areas, and the tank farm has a canopy, the possibility of this type of problem becoming environmentally damaging is minimal.

Visual inspection of the complete operation will detect any runoff problems present. Since all of the equipment used in this operation is above ground and will be in a paved area, any leaks or ruptures will easily be detected throughout the facility.

All bulk tankage areas will have a canopy or be located indoors and will also be enclosed within concrete diking so that any runoff will be contained. A description of the concrete diking is discussed further in Section 9.2.

Any failures which may occur at this facility would most likely result in a short-term discharge of liquids into a diked area. On-site portable pumps will allow for immediate cleanup of any spills or discharges which might occur from a failure.

In the event of leakage or rupture, the faulty equipment should easily be identified by visual inspection. Once identified, the faulty equipment will be immediately taken out of service, and any wastes (or product) it may contain will be removed and directed into containers or available storage tank space on-site if the quantity contained in the faulty equipment merits removal.

To minimize the possibility of runoff, Badger Disposal performs the following preventative actions:

- Incoming materials are prescreened prior to acceptance. Accepted materials are then directed into incoming material storage tanks or into the container storage area. All handling and storage areas are appropriately contained.
- Employee training and immediate availability of personnel protective equipment on-site contribute to immediate response to possible runoff problems.

- Daily visual inspections and routine preventative maintenance of all equipment aid in the prevention of potential runoff problems.

- Loading and unloading areas are paved and diked in a manner to preclude runoff from entering surface waters and groundwater.

Should a spill result in a short-term release that was outside of a contained area or paved area, immediate actions would be taken to stop the release. Any ponding material would be absorbed using on-site absorbent materials. The area of the spill would then be analyzed to determine the extent of contamination. Proper reporting would also be made to all appropriate agencies and the contaminated soil removed. All contaminated material would then be handled in accordance with all local, state and federal regulations. Further information on spill handling is contained in the SPCC Plan, as contained in Appendix C.

9.2 Containment Structures

The storage/process building and lab pack building are designed with 6-inch concrete curbing at entrances to the buildings to minimize the risk of any accidental spillage leaving the confines of the buildings. The curbing, walls and floors of the buildings are designed to meet the requirements of WAC NR 640.13(1) and 40 CFR 264.175(b)(3), and are sufficiently level to ensure the integrity of the containment. There are no sewer discharges located in any operational or storage area of the storage/process or lab pack buildings.

The storage/process building provides containment capacity of 11,379 gallons of liquid materials in accordance with WAC NR 640.13(1). An additional 7,000 gallons of containment capacity will be available upon the installation of the storage building addition. Appendix A contains calculations on the containment capacity.

The lab pack building contains five separate containment areas for drum storage. Each of the five containment areas will be constructed of 6-inch wide and 6-inch high walls and will provide containment capacity of over 630-gallons of liquid materials in accordance with WAC NR 640.13(1). Because the intended use of these containment areas is to segregate incompatible wastes, adjoining containment areas will be separated by 12-inch wide and 6-inch high walls in accordance with WAC NR 640.15.

The tank farm area has two containment areas. The first containment area is intended to contain any spillage from tank loading/unloading operations or from tank releases. This containment area is constructed of 12-inch wide and 42-inch high concrete walls and a concrete floor with a collection sump. The walls and floor of this containment area will be lined and coated to prevent failure owing to the pressure gradients, including static head and external hydrological forces, physical contact with products to which it is exposed, climatic conditions and the stress of daily operations, including stresses from nearby vehicular traffic.

The second containment area is intended to contain spillage from tanker loading/unloading operations. This containment area consists of a double sloped, lined, concrete loading/unloading pad with a center collection sump and trench. All piping and ancillary equipment, including filters, are included within the concrete containment.

The tank farm containment areas provide containment capacities of over 20,760 gallons for tank spillage and 1,590 gallons for the tanker loading/unloading area. Appendix A contains calculations on the capacity of the containment areas.

Each of the two 5,500-gallon aboveground storage tanks located in the lab pack building also have two containment areas. The first containment area is intended to contain any spillage from drum unloading operations or from tank releases. The containment areas for each tank are constructed of 12-inch wide by 54-inch high concrete walls and a concrete floor. The walls and floor of these containment areas will be lined and coated to prevent failure owing to pressure gradients, including static head and external hydrological forces, physical contact with products to which it is exposed, climatic conditions and the stress of daily operations. Each of these containment areas provide a containment capacity of over 5,640 gallons.

The second containment area is intended to contain spillage form drum unloading operations. These containment areas are constructed of 6-inch wide by 6-inch high concrete dikes and a concrete floor. Each of these containment areas provide a containment capacity of over 55-gallons.

9.3 Precipitation Management

Badger Disposal's designated Roll-off Box storage area is located north of the lab pack building on the north end of the property. Roll-off containers are stored on a reinforced concrete pad and are covered

with tarps at all times to prevent precipitation from coming in contact with the stored materials. All other designated container storage areas are located indoors. This eliminates the possibility of precipitation accumulation in the containment structures for all container storage areas. However, because Badger Disposal's tank farm and loading/unloading pad is located outdoors, Badger Disposal has designed a canopy to cover these areas. In the unlikely event that excess amounts of water or snow accumulates in the outside storage areas, Badger Disposal will remove any excess accumulation from the containment systems via portable pumps. Badger Disposal will then manage the accumulated precipitation in one or more of the following ways:

- Pump the excess precipitation into a process tank for processing into waste fuel products.
- Conduct analytical testing for disposal at an appropriate disposal facility.
- Conduct analytical testing for approval from the Sewer Department for discharge to the Milwaukee sewer system.

9.4 Pavement Plan

Any spill release on to pavement would be contained using absorbent booms and cleaned up as specified in the SPCC Plan (contained in Appendix C). Any potential run-off to the on-site sewer system will also be prevented by the use of absorbent booms.

Section 10

EMPLOYEE EXPOSURE PREVENTION

In order to assure the health and safety of Badger Disposal employees, steps are taken to prevent undue exposure to hazardous waste and hazardous waste constituents. Badger Disposal management personnel periodically assess the exposure areas employees may encounter while performing their individual job assignments. When appropriate, Badger Disposal management personnel will take action to reduce such exposures. These actions may include redesigning existing systems, utilization of personnel protective equipment (PPE), and emergency equipment.

10.1 Personnel Protective Equipment

All personnel employed by Badger Disposal are supplied with PPE to reduce exposures associated with individual job assignments. Types of PPE provided can include, but is not limited to the following:

- Air filtering respirators, with activated carbon filters.
- Protective steel-toed work boots.
- Protective gloves.
- Safety glasses and/or goggles.
- Uniforms that Badger Disposal purchases and launders.
- Air filtering respirators for everyday use.
- Hearing protection.
- Air supplied respirators, such as SCBA's for use when necessary.
- Tyvek® or other protective clothing, as necessary.
- Other work gloves, when necessary.
- Hard hats for head protection.

10.2 Emergency Equipment

All emergency equipment is kept at the facility in easily accessible locations. Appendix B provides a list of emergency and decontamination equipment along with a list of places it can be found at the facility. Sheet 16 of 18 in Appendix P shows where the emergency equipment is located throughout the facility.

After an emergency event, or as needed during the emergency event, all emergency equipment and supplies shall be decontaminated or replaced. All safety equipment shall be inspected and evaluated for readiness before operations are resumed in the affected areas.

Emergency spill control equipment is located in easily accessible areas throughout the facility. This equipment includes the following:

- Bags of clay and vermiculite
- Sand bags
- Spill pillows
- Shovels
- Push brooms
- Long-handled squeegees
- Fire extinguishers
- Pipe balloons
- Portable liquid vacuum unit
- Empty, 55-gallon drums
- Empty, overpack drums
- Non-sparking tools
- Sorbent booms
- Personnel protective equipment

Section 11

GROUNDWATER CONTAMINATION PREVENTION

In order to prevent contamination of groundwater, the Badger Disposal facility will utilize primary, secondary, and in some case, tertiary containment for all operations. In addition, Badger Disposal has several policies in place to further prevent groundwater impacts. These policies include runoff prevention, emergency spill procedures, precipitation management policies, etc. As reported in the hydrogeology section, area water supply wells draw groundwater from the sandstone and Niagara dolomite aquifers. The sandstone aquifer is most frequently used in the area and is overlain by Maquoketa Shale which acts as a confining layer. The Niagara aquifer is overlain by 50 to 100 feet of glacial till (mainly clay). Thus, in the unlikely event of a spill or release escaping the containment structures, potential for contamination of groundwater resources would be minimal.

Section 12

MANAGEMENT OF IGNITABLE OR REACTIVE WASTES

Badger Disposal will, in addition to the items delineated in this plan, take precautions to prevent the ignition of ignitable or reactive wastes to conform with WAC NR 630.17 and 40 CFR 264.17. These procedures include segregation of incompatible materials and separation of materials from ignition sources such as open flames, hot surfaces, frictional heat, sparks, radiant heat, etc. In addition, Badger Disposal management is responsible for signing all "Hot Work" permits prior to any work being done. This procedure allows for third party review of any welding or hot work to minimize the possibility of igniting any wastes. It is Badger Disposal's policy not to allow smoking except in designated non-operational areas such as office areas, the lunch room and the locker room. Badger Disposal has posted "No Smoking" signs in highly visible areas of the entire facility and main entrances.

Necessary precautions will be taken by Badger Disposal to mitigate any reactions that generate or produce heat or pressure, fire or explosion, threaten human health or the environment or pose a risk of damaging the structural integrity of the equipment or the facility as required by WAC NR 630.17 (2) and 40 CFR 264.17(b). Some of these precautions include an extensive prequalification process, personnel training, fire suppression systems, and segregation of incompatible wastes. In addition, to conform with WAC NR 640.15 and 40 CFR 264.17, incompatible waste storage areas will contain individual secondary containment systems to ensure mitigation of reactions if a container containing compatible wastes leaks or ruptures. Any containers that contain known incompatible wastes will not be used for placement of additional wastes.

Appendix A

CONTAINMENT AREA CALCULATIONS

CONTAINMENT SUMMARY
FOR
BADGER DISPOSAL FACILITY

PAGE	CONTAINMENT AREA	SHEET NUMBER	MAXIMUM VOL. STORED (GAL.)	MIN. CONTAINMENT REQ'D. BY RULE (GAL.)	CONTAINMENT CAPACITY (GAL.)
2	LAB-PACK BUILDING DRUM STORAGE CONTAINMENT AREA CALCULATIONS (TYP. 5) (3)	11 of 18	1,595	160	632
3	LAB-PACK BUILDING TYPICAL DEPACK ROOM CONTAINMENT AREA CALCULATIONS (3)	11 of 18	220	55	177
5	LAB-PACK BUILDING BULK STORAGE CONTAINMENT AREA CALCULATIONS (TYP. 2) (3)	11 of 18	5,500	5,500	5,684
6a	EXISTING PROCESS/STORAGE BUILDING DRUM STORAGE CONTAINMENT AREA CALCULATIONS	(1)	39,600	6,000 (Tanker)	11,379
7	PROPOSED PROCESS/STORAGE BUILDING DRUM STORAGE CONTAINMENT AREA CALCULATIONS (3)	10 of 18	126,960	12,696	18,204
8	TANK FARM BULK STORAGE CONTAINMENT AREA CALCULATIONS (3)	12 of 18	12,000	12,000 + 25-year, 24-hour storm	20,765
11	TANK FARM LOADING/UNLOADING PAD CONTAINMENT AREA CALCULATIONS (3)	12 of 18	(2)	(2)	1,591
N/A	ROLL-OFF STORAGE	N/A	6-20 CY ROLL-OFFS	N/A	N/A

Notes:
(1) See Spectrum Engineering Drawing No. 05490-D1, 8/25/06, and attached Building Containment Calculations, 8/24/06.
(2) Existing Loading/Unloading Pad Containment is not adequate for largest compartment of tanker (6,000 gallons), without utilizing Bulk Storage Containment. Design of Loading/Unloading Pad Containment will need to be reviewed when bulk tank farm is installed.
(3) Volume stored and containment capacity are based on calculations, dated February 24, 1995, prepared by others.

LAB-PACK BUILDING
DRUM STORAGE CONTAINMENT AREA CALCULATIONS
(see Sheet 11 of 18)

Formulas/Conversions

Volume of cube = $(l \times w)h$

Volume of cylinder = $\pi r^2 \times h$

Feet^3 = 7.48 gallons

Volume of empty containment area

Containment area dimensions:

l = 13 feet w = 20 feet h = 0.5 feet

Containment area volume in feet:

(13 feet x 20 feet) 0.5 feet = 130 feet^3

Containment area volume in gallons:

130 feet^3 x 7.48 gallons/feet^3 = 972.40 gallons

Volume of 29 drums

Drum dimensions:

r = 1 foot h = 0.5 foot

Volume of one drum in feet:

$\pi r^2 \times h$ = 3.142 x 1 foot^2 x 0.5 foot = 1.571 feet^3

Volume of 29 drums in feet:

1.571 feet^3/drum x 29 drums = 45.56 feet^3

Volume of 29 drums in gallons:

45.56 feet^3 x 7.48 gallons/feet^3 = 340.79 gallons

Volume of containment area less the volume occupied by 29 drums

972.40 gallons - 340.79 gallons = 631.61 gallons

Volume of 10% containment storage capacity

29 drums x 55 gallons/drum = 1,595 gallons

1,595 gallons x 0.10 = 159.50 gallons

Solution

Volume of containment area with 29 drums must be greater than 55 gallons or 10% of the total containment storage capacity, whichever is greater.

631.61 gallons is greater than 159.50 gallons thus containment capacity is sufficient.

LAB-PACK BUILDING
TYPICAL DEPACK ROOM CONTAINMENT AREA CALCULATIONS
(see Sheet 11 of 18)

Formulas/Conversions

Volume of cube = (l x w)h

Volume of cylinder = πr^2 x h

Feet^3 = 7.48 gallons

Volume of empty containment area

Containment area dimensions:

l = 12 feet w = 9 feet h = 0.5 feet

Containment area volume in feet:

(12 feet x 9 feet) 0.5 feet = 54 feet^3

Containment area volume in gallons:

54 feet^3 x 7.48 gallons/feet^3 = 403.92 gallons

Volume of containment area occupied by work bench and hood

Work bench dimensions:

l = 12 feet w = 3 feet h = 0.5 feet

Hood dimensions:

l = 4 feet w = 3 feet h = 0.5 feet

Occupied containment area volume in feet:

[(12 feet x 3 feet) 0.5 feet] + [(4 feet x 3 feet) 0.5 feet] = 24 feet^3

Occupied containment area volume in gallons:

24 feet^3 x 7.48 gallons/feet^3 = 179.52 gallons

Volume of 4 drums within containment area

Drum dimensions:

r = 1 foot h = 0.5 foot

Volume of one drum in feet:

πr^2 x h = 3.142 x 1 foot^2 x 0.5 foot = 1.571 feet^3

Volume of drums in feet:

1.571 feet^3/drum x 4 drums = 6.28 feet^3

Volume of 4 drums in gallons:

6.28 feet^3 x 7.48 gallons/feet^3 = 47.0 gallons

LAB-PACK BUILDING
TYPICAL DEPACK ROOM CONTAINMENT AREA CALCULATIONS
(Continued)

Volume of containment area less the volume occupied by work bench, hood and 4 drums

(403.92 gallons - 179.52 gallons) - 47.0 gallons = 177.40 gallons

Volume of 10% containment storage capacity

4 drums x 55 gallons/drum = 220 gallons

220 gallons x 0.10 = 22 gallons

Solution

Volume of containment area with 4 drums must be greater than 55 gallons or 10% of the total containment storage capacity, whichever is greater.

177.40 gallons is greater than 55 gallons thus containment capacity is sufficient.

LAB-PACK BUILDING
BULK STORAGE CONTAINMENT AREA CALCULATIONS
(see Sheet 11 of 18)

Formulas/Conversions

Volume of cube = $(l \times w)h$

Volume of cylinder = $\pi r^2 \times h$

$Feet^3$ = 7.48 gallons

Volume of empty containment area

Containment area dimensions:

l = 15.5 feet w = 15.5 feet h = 4 feet

Containment area volume in feet:

(15.5 feet x 15.5 feet) 4 feet = 961 $feet^3$

Containment area volume in gallons:

961 $feet^3$ x 7.48 gallons/$feet^3$ = 7,188.28 gallons

Volume of 5,500-gallon tank

Tank dimensions beneath top of containment wall:

r = 4 feet h = 4 feet

Volume of 5,500-gallon tank in feet:

$\pi r^2 \times h$ = 3.142 x 16 $feet^2$ x 4 feet = 201.09 $feet^3$

Volume of 5,500-gallon tank in gallons:

201.09 $feet^3$ x 7.48 gallons/$feet^3$ = 1,504.15 gallons

Volume of containment area less volume occupied by 5,500-gallon tank

7,188.28 gallons - 1,504.15 gallons = 5,648.13 gallons

Solution

Volume of containment area with 5,500-gallon tank must be greater than 5,500 gallons or 10% of the total containment storage capacity, whichever is greater.

5,648.13 gallons is greater than 5,500 gallons thus containment capacity is sufficient.

BADGER DISPOSAL OF WI, INC.
BUILDING CONTAINMENT CALCULATIONS
CURRENT OPERATIONS

CALCULATE BUILDING AREA

AREA A = 63'-11" x 31'-0"
A = 1,981.4 s.f.

AREA B = (77'-8" X 73'-10") - E
B = 5,734.4 s.f. - 31.3 s.f.
B = 5,703.1 s.f.

AREA C = (34'-0" x 38'-4 ½") - E
C = 1,304.8 s.f - 31.3 s.f
C = 1,273.5 s.f.

AREA D = 15'-6" x 5'-1 ½"
D = 79.4 s.f.

AREA E = 7'-1" x 4'-5"
E = 31.3 s.f.

Total Combined Area = A_{TOT} = A + B + C + D = 1,981.4 + 5,703.1 + 1,273.5 + 79.4
A_{TOT} = 9,037.4 s.f.

CALCULATE GROSS VOLUME OF BUILDING CONTAINMENT (EMPTY):

Containment curb and ramp heights vary. Per photos and site visit, lowest containment curbing is 3 ½" (worst case).
Volume of empty containment = V_E = A_{TOT} x (3.5"/12")
V_E = 9,037.4 s.f. x 0.292 ft = 2,636 c.f.
V_E = 2,636 c.f. x 7.481 gal/c.f.
V_E = 19,719 gal.

DETERMINE DRUM CAPACITY:

Badger's hazardous waste license allows 720 drums of hazardous waste to be stored on containment pallets on the floor. In accordance with drawing 05490-D1, the capacity of the building is 860 drums on the floor and 1,720 drums double-stacked. Only solid waste can be double-stacked. The volume of the building containment (V_E), minus the drum volume on the floor (V_D), minus the volume of the containment pallets (V_C), must be greater than 10% of the hazardous waste drum capacity (720) or the largest container.
720 drums x 55 gal. = 39,600 gal.

CALCULATE VOLUME REQUIRED:

In accordance with NR 664.0175 of *Subchapter I - Containers*, the containment shall have sufficient capacity to contain 10% of the volume of containers. Containers that do not contain hazardous waste with free liquids, or hazardous waste, do not need to be considered.

Volume Required = V_R = 720 x 55 gal. x 0.10
V_R = 3,960 gal.

BADGER DISPOSAL OF WI, INC.
BUILDING CONTAINMENT CALCULATIONS
CURRENT OPERATIONS

CALCULATE VOLUME OF CONTAINMENT PALLETS:

Volume of 6 Drum Containment Pallet = 61 gal.
Volume of 8 Drum Containment Pallet = 82 gal.
Assume all pallets are 8 drum containment pallets.
V_P = 82 gal. x qty. of pallets
720 Hazardous waste drums ÷ 8 drums/pallet = 90 pallets
V_P = 82 gal. x 90
V_P = 7,380 gal.

CALCULATE VOLUME OF DRUMS ON THE FLOOR:

Volume of Drums on floor (worst case) = $V_D = \pi r^2 h$
$V_D = \pi(1)^2$ 3.5"/12 x qty. drums = 0.9163 c.f x 7.481 gal./c.f. x qty. drums
V_D = 6.85 gal. x qty. drums
860 drum capacity - 720 hazardous waste drums on pallets = 140 Non-hazardous waste drums on the floor
V_D = 6.85 gal./drum x 140 drums
V_D = 959.7 gal.

CALCULATE NET VOLUME OF BUILDING CONTAINMENT (AT STORAGE CAPACITY):

Volume of Containment = $V_C = V_E - V_P - V_D$
V_C = 19,719 gal. - 7,380 gal. - 960 gal.
V_C = 11,379 gal.

COMPARE CONTAINMENT VOLUME (AT STORAGE CAPACITY) TO CONTAINMENT VOLUME REQUIRED:

1. Volume Required V_R = 3,960 gal. < V_C = 11,379 gal., therefore, there is adequate containment capacity for hazardous waste drums.

2. Volume of containment pallets = 82 gal. for 8 drum capacity and 61 gal. for 6 drum capacity. In both cases, the containment pallet capacity exceeds 10% of the volume that can be stored on pallets. Therefore, there is adequate containment capacity for hazardous waste drums.
   6 drums x 55-gal./drum = 330 gal.
   61 gal. of containment = 61/330 x 100 = 18.5%

   8 drums x 55-gal./drum = 440 gal.
   82 gal. of containment = 82/440 x 100 = 18.6%

3. Volume of Tanker (V_T) is 6,000 gal. Volume of Containment (V_C) must be adequate for a full tanker inside the building. V_T = 6,000 gal. < V_C = 11,379 gal., therefore, there is adequate containment capacity for a tanker loading inside the building.

BADGER DISPOSAL OF WI, INC.
BUILDING CONTAINMENT CALCULATIONS
CURRENT OPERATIONS

CONCLUSION:

Badger uses containment pallets for all hazardous liquids, which provide adequate secondary containment capacity for the containers stored on the pallets. Furthermore, the building also provides additional containment for both hazardous and non-hazardous liquid waste and for tanker unloading.

PROPOSED PROCESS/STORAGE BUILDING
DRUM STORAGE CONTAINMENT AREA CALCULATIONS
(see Sheet 10 of 18)

Formulas/Conversions

Volume of cube = $(l \times w)h$

Feet^3 = 7.48 gallons

Drum Capacity: 2,000-gallon blending tank
1,136 drums hazardous waste (on pallets, no stacking) (or) 2,272 drums nonhazardous waste (on pallets, double stacked)

Dimensions of building

Total Building	117 feet x 148 feet x 0.25 feet = 4,329 feet^3
Blending Area	22 feet x 16 feet x 0.25 feet = 88 feet^3
Office Area	34 feet x 34 feet x 0.25 feet = 289 feet^3
Staging Area	20 feet x 25 feet x 0.25 feet = 125 feet^3
Solids Work Area	18 feet x 57 feet x 0.25 feet = 256.50 feet^3
Pillars	3(1 feet x 1 feet x 0.25 feet) = 0.75 feet^3

Calculation of cubic footage of containment area

Total building dimension minus blending area, office area, staging area, solids work area, and pillars.

4,329 feet^3 - 88 feet^3 - 289 feet^3 - 125 feet^3 - 256.50 feet^3 - 0.75 feet^3 = 3,569.75 feet^3

Volume of empty containment area

3,569.75 feet^3 x 7.48 gallons/feet^3 = 26,701.73 gallons

Volume of 285 pallets holding 4 drums each

Drum pallet dimensions: 4 feet x 4 feet x 0.25 feet = 4 feet^3

4 feet^3 x 284 pallets = 1,136 feet^3

1,136 feet^3 x 7.48 gallons/feet^3 = 8,497.28 gallons

Volume of containment area with 284 pallets holding drums

26,701.73 gallons - 8,497.28 gallons = 18,204.45 gallons

Volume of 10% containment storage capacity

2,272 drums x 55 gallons/drum = 124,960 gallons

124,960 gallons + 2,000-gallon tank = 126,960 gallons

126,960 gallons x 0.10 = 12,696 gallons

Solution

Volume of containment area with 284 pallets of drums (1,136 drums hazardous waste not stacked or 2,272 drums nonhazardous waste double stacked) and a 2,000-gallon tank must be greater than 2,000 gallons or 10% of the total containment storage capacity, whichever is greater.

18,204.45 gallons is greater than 12,696 gallons, thus containment capacity is sufficient.

TANK FARM
BULK STORAGE CONTAINMENT AREA CALCULATIONS
(see Sheet 12 of 18)

Formulas/Conversions

Volume of cube = $(l \times w)h$ Hypotenuse = $(l + w)^{1/2}$

Volume of cylinder = $\pi r^2 \times h$ Volume of Pyramid = $\frac{1}{3}$ (base area) x h

Feet^3 = 7.48 gallons Rise at hypotenuse = slope x run

Volume of containment area occupied by sloped base

Containment area dimensions:

l = 38 feet w = 38 feet h = 3.5 feet Slope (base) = 2% from SW to NE

Containment area of "Volume 1" in feet:

1) SW to NE hypotenuse = $(38^2 + 38^2)^{1/2}$ = 53.74 feet
2) Distance of hypotenuse to SW or NE corner = 53.74/2 = 26.87 feet
3) Volume of sloped base from SW corner to hypotenuse = Volume^1
4) Volume of pyramid

   h = ½hypotenuse
   = ½(53.74)
   = 26.87 feet

5) Rise at hypotenuse = 0.02 x 26.87 feet = 0.537 feet
6) Pyramide volume = $\frac{1}{3}$ (53.74 feet x 0.537 feet)(26.87 feet) = 258.67 feet^3

Containment area "Volume 3" in feet:

1) "Volume 3" = rise at hypotenuse x $(l \times w)^{1/2}$
2) "Volume 3" = 0.537 feet x (38 feet x 38 feet)½
3) "Volume 3" = 387.71 feet^3

Containment area "Volume 2" in feet:

1) By Geometry: "Volume 1" + "Volume 2" = "Volume 3"
2) "Volume 2" = 387.71 feet^3 - 258.67^3
3) "Volume 2" = 129.04 feet^3

Total volume occupied by sloped base

1) "Volume 1" + "Volume 2" + "Volume 3"
2) 258.67 feet^3 + 129.04 feet^3 + 387.71 feet^3 = 775.42 feet^3
3) 775.42 feet^3 x 7.48 gallons/feet^3 = 5,800.14 gallons

TANK FARM
BULK STORAGE CONTAINMENT AREA CALCULATIONS
(Continued)

Volume of empty containment area with sloped base

Containment area dimensions:

l = 38 feet w = 38 feet h = 3.5 feet

Containment area volume in feet:

(38 feet x 38 feet) 3.5 feet = 5,054 feet^3

Containment volume in gallons:

5,054 feet^3 x 7.48 gallons/feet^3 = 37,803.92 gallons

Volume of 12,000-gallon tank

Tank dimensions:

r = 6 feet h = 3.5 feet

Volume of 12,000-gallon tank in feet beneath the top of the containment wall:

$\pi r^2 \times h$ = 3.142 x 36 feet^2 x 3.5 feet = 395.89 feet^3

Volume of 12,000-gallon tank in gallons:

395.89 feet^3 x 7.48 gallons/feet^3 = 2,961.27 gallons

Volume of four 12,000-gallon tanks in gallons:

2,961.27 gallons/tank x 4 tanks = 11,845.09 gallons

Volume of sloped base occupied by tank volume
(Assume tanks installed 90° to ground surface)

Rise = Slope x Run

Rise = 0.002 x 12 feet =0.24 feet

Volume occupied by tank = $\frac{1}{2}\pi r^2 h$

Volume occupied by tank = $\frac{1}{2}\pi$(6 feet)^2 (0.24 feet) = 13.57 feet^3

Volume occupied by 4 tanks = 4 tanks x 13.57 feet^3 = 54.29 feet^3

Volume in gallons = 54.29 feet^3 x 7.48 gallons/feet^3 = 406.09 gallons

Volume of sloped containment area with four 12,000-gallon tanks

Volume of empty containment area = 37,803.92 gallons

Volume of sloped base with 4 tanks = 5,800.14 gallons - 406.09 gallons = 5,394.05 gallons

Volume of four 12,000-gallon tanks within containment area = 11,845.09 gallons

Volume of sump = 200 gallons

Volume of sloped containment area with four 12,000-gallon tanks and sump
= (37,803.92 gallons - 5,394.05 gallons - 11,845.09 gallons) + 200 gallons = 20,764.78 gallons

TANK FARM
BULK STORAGE CONTAINMENT AREA CALCULATIONS
(Continued)

Solution

Volume of containment area with four 12,000-gallon tanks must be greater than 12,000 gallons or 10% of the total containment storage capacity, whichever is greater.

20,764.78 gallons is greater than 12,000 gallons thus containment capacity is sufficient.

LOADING/UNLOADING PAD
CONTAINMENT AREA CALCULATIONS
(see Sheet 12 of 18)

Formulas/Conversions

Volume of cube = (l x w)h

Volume of right triangle = [(l x w)h]/2

Area of right triangle = $a^2 + b^2 = c^2$

Feet^3 = 7.48 gallons

Volume of containment area

dimensions:

l = 19.5 feet w = 24 feet Slope = 2%

Solve for height (h):

h = Slope x l

h = 0.02 x 19.5 feet

h = 0.39 feet

Containment area in feet^3:

[(h x l)w] = y feet^3

[(0.39 feet x 19.5 feet)24 feet = 182.52 feet^3

Containment area volume in gallons:

182.52 feet^3 x 7.48 gallons/feet^3 = 1,365.25 gallons

Volume of trench:

Trench dimensions:

l = 18 feet w = 1 foot Slope = 2%

Solve for height (h):

h = Slope x l

h = 0.02 x 18 feet

h = 0.36 feet

Trench in feet^3:

[(h x l)w]/2 = y feet^3

[(0.36 feet x 18 feet)1 foot]/2 = 3.24 feet^3

Trench volume in gallons:

3.24 feet^3 x 7.48 gallons/feet^3 = 24.24 gallons

LOADING/UNLOADING PAD
CONTAINMENT AREA CALCULATIONS
(Continued)

Volume of sump within containment area

Sump dimensions:

l = 3 feet w = 3 feet h = 3 feet

Sump in feet ^{3}:

(3 feet x 3 feet)3 feet = 27 feet^3

Sump volume in gallons:

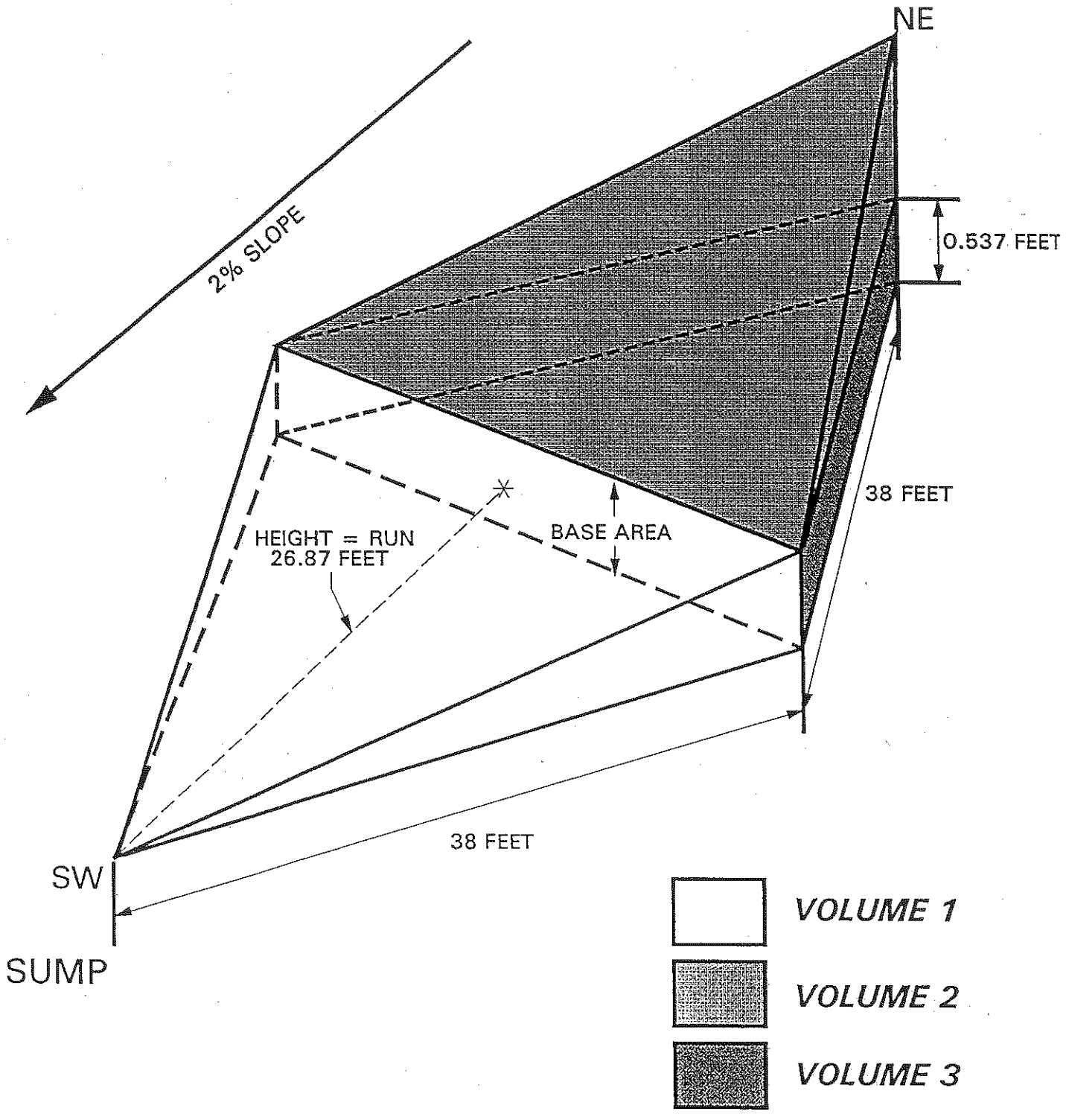
27 feet^3 x 7.48 gallons/feet^3 = 201.96 gallons

Total loading/unloading area volume

Volume of containment area including trench and sump volumes.

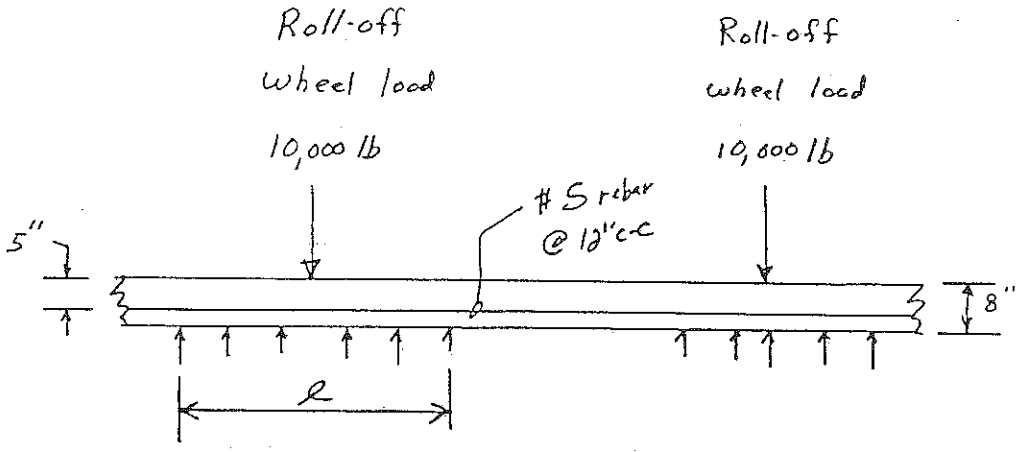
1,365.25 gallons + 24.24 gallons + 201.96 gallons = 1,591.45 gallons

SLOPED TANK FARM CONTAINMENT AREA



VOLUME CALCULATIONS FOR SECONDARY CONTAINMENT

Roll-off Area Concrete Design



Assume

max Rolloff wheel load = 10,000 lb

Concrete thickness = 8 inch

No 5 rebar @ 12" c-c ($0.31 in^2$)

Soil pressure capability = 1500 psf

Loading carried by 2 ft wide strip

$10{,}000\ lbs = 2\ ft\ (\ell)(1500\ psf)$

$\ell_{req'd} = 3.33\ ft$

Max moment below wheel

$$M = (1500\ psf)(2\ ft)\left(\frac{3.33\ ft}{2}\right)\left(\frac{3.33\ ft}{4}\right)$$

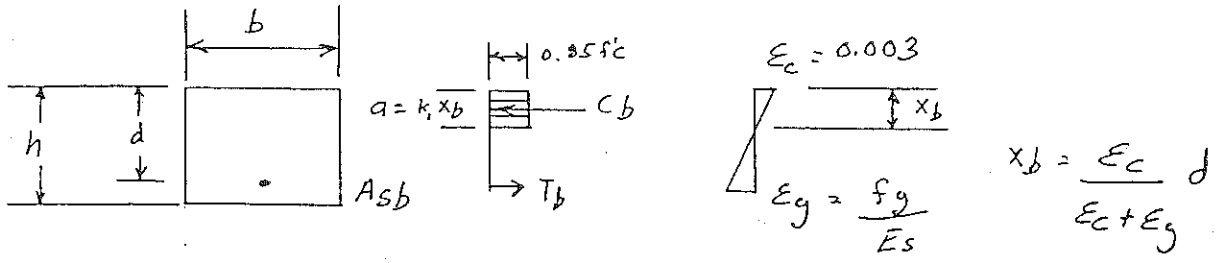
$$= 4158\ ft\text{-}\#$$

$M_{ultimate} = 4158\ ft\text{-}\# \times 1.7$ (Safety factor)

$= 7{,}068\ ft\text{-}\#$

Concrete Design - Ultimate Strength Method

Given $f'_c = 3500\,psi$ $f_y = 60{,}000\,psi$ $k_1 = 0.85$ if $f'_c \le 4000\,psi$



$$x_b = \frac{\varepsilon_c}{\varepsilon_c + \varepsilon_y} d$$

$$C_b = 0.85 f'_c\, b\, k_1\, x_b$$

$$T_b = A_{sb} f_y = \rho_b\, b\, d\, f_y$$

$$C_b = T_b$$

$$= 0.85 f'_c\, b\, k_1 \left(\frac{87{,}000\, d}{87{,}000 + 60{,}000}\right)$$

$$= \rho_b\, b\, d\, f_y$$

Balance Ratio $\rho_b = \dfrac{0.85 f'_c\, k_1}{f_y}\left(\dfrac{87{,}000}{87{,}000 + f_y}\right)$

$$= \frac{0.85(3500)(0.85)}{40{,}000}\left(\frac{87{,}000}{87{,}000 + 60{,}000}\right)$$

$$= 0.037$$

ACI code limits tension reinforcement to 75% of the balanced ratio

$$.75\,\rho_b = (.75)(0.037)$$

$$= 0.027$$

Rebar provided

$$p = \frac{A_s}{bd}$$

$$= \frac{(0.31)(2)}{(24)(5)}$$

$$= 0.005$$

$0.005 < 0.027 \quad (.75 p_b)$ OK

Ultimate Strength Available

$$T = A_s f_y$$

$$= 0.31 \frac{in^2}{ft} \times 2f \times 60{,}000 psi$$

$$= 37{,}200 \text{ lbs}$$

$$a = \frac{T}{0.85 f'_c b}$$

$$= \frac{37{,}200}{0.85(3500)(24)}$$

$$= 0.52$$

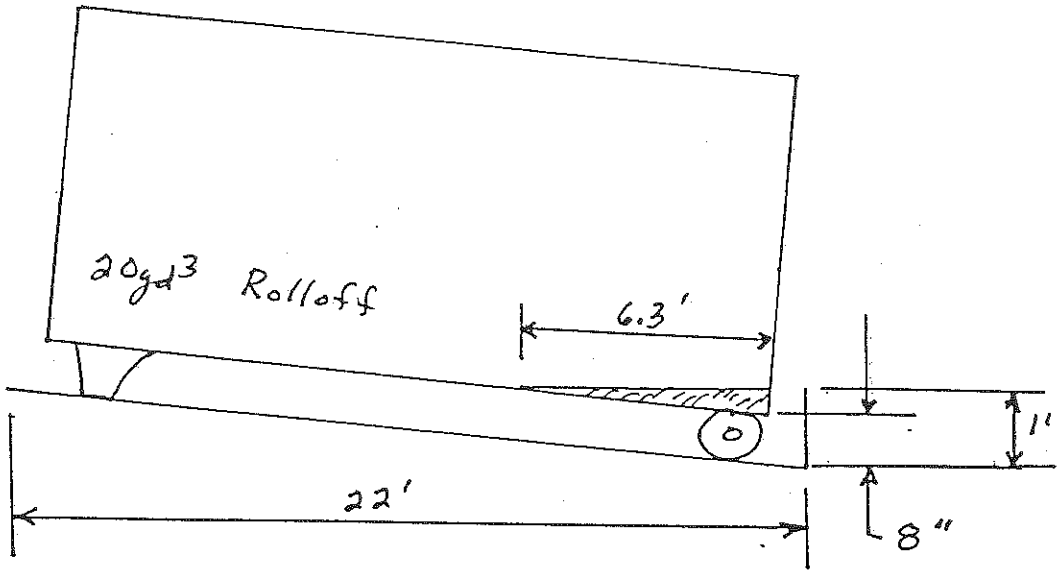
$$M'_u = \frac{T\left(d - \frac{a}{2}\right)}{12}$$

$$= \frac{37{,}200 \text{ lbs}\left(5 - \frac{0.52}{2}\right)}{12}$$

$$= 14{,}694 \text{ ft-\#}$$

M'_u available $> M_u$ required OK

$14{,}694 \text{ ft-\#} > 7{,}068 \text{ ft-\#}$



Assumptions

1) 60' x 22' containment area
2) 1 ft high berm wall far end
3) floor slope front to back
4) 6 Rolloffs stored in containment area
5) Rolloffs have 8 inches of floor clearance

Secondary Containment

60'x22' Sloped floor with 1 ft vertical drop

(Immersion of rolloffs)

$$V = \tfrac{1}{2}(60')(22')(1') - 6\left[\tfrac{1}{2}(6.3')(7.3')\left(\tfrac{4}{12}'\right)\right]$$

$$= 660\ ft^3 - 46\ ft^3$$

$$= 614\ ft^3 \times \frac{1\ yd^3}{27\ ft^3}$$

$$= 22.7\ yd^3 > 20\ yd^3 \quad OK$$

LAB PACK BUILDING CONTAINMENT VOLUME CALCULATIONS

CONTAINMENT VOLUME FOR ROOMS WITH 29-55gallon DRUMS
LAB-PACK BLDG

CONTAINMENT VOLUME TO BE 10% OF TOTAL STORED MATERIAL OR CONTENTS OF 1 STORAGE TANK - WHICHEVER IS LARGER
(REF. NR 640.13(1))

1. 55gallons (1 DRUM)
2. 29 x 55gallons x 0.1 = 160gallons ← GOVERNS.

So: 160gallons x 0.13378 ft³/gallon = 21.4ft³ REQ'D

ROOM IS 13'x20'

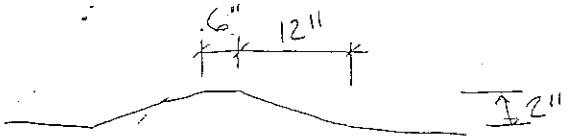
55gallon DRUMS ARE 22" IN ϕ.

DETERMINE MIN. CURB HEIGHT

$13' \times 20' = 260 ft^2$
$- 29\left[\pi \left(\frac{11"}{12"/ft}\right)^2\right] = 75.56 ft^2$ 29-55gallon DRUM AREA
$183.44 ft^2$

$h = \frac{21.4 ft^3}{183.44 ft^2} = 0.117 ft = 1\frac{13}{32}"$ min curb height

USE 2" CURB



$13' \times 20' \times .167' = 43.4 ft^3$
$- 29\left[\pi \times \frac{11"}{12"/ft}\right]^2 (.167') = 12.6 ft^3$
$- 1.0' \times .167' \times 13' \times \frac{1}{2} = 1.1 ft^3$

FLOOR SLOPES 1½ TO BACK WALL
$+ 12' \times .13' \times \frac{1}{2} \times 20' = 15.6 ft^3$

$29.7 ft^3 + 15.6 ft^3 = 45.3 ft^3$

$45.3 ft^3 \times 7.48052 gallons/cuft = 338 gallons$

338 gallons ≥ 160 gallons — OK.

USE 2" HIGH CURB & 1½" ROOM SLOPE

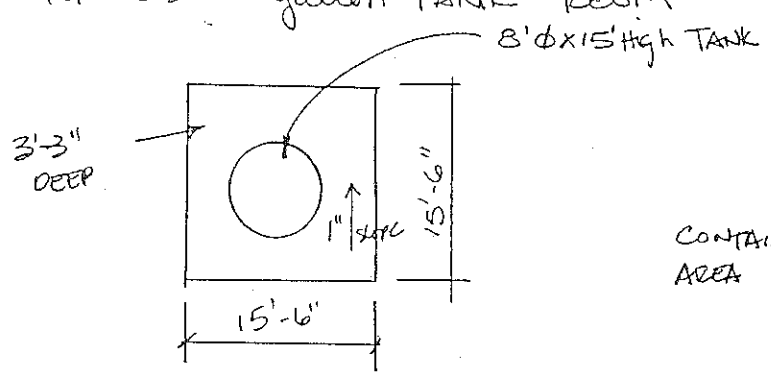
GRAEF ANHALT SCHLOEMER and Associates Inc. Engineers & Scientists

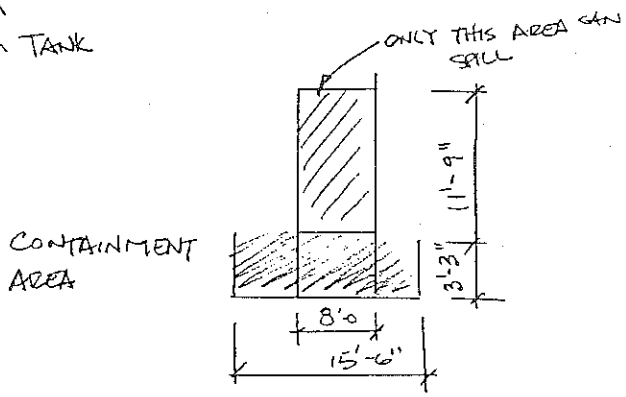
PROJECT NO. 957701 BY: CRM DATE: 3-29-95 SHEET

PROJECT EOG ENVIRONMENTAL CHECKED BY: DATE:

CONTAINMENT VOLUME – LAB PACK BUILDING

FOR 5500 gallon TANK ROOM





CONTAINMENT AREA

$15.5' \times 15.5' \times 3.25' = 780.8 ft^3$

SLOPE $+ 15.5' \times .08' \times \frac{1}{2} \times 15.5' = 9.6 ft^3$

$790.4 ft^3$

$790.4 ft^3 (7.48052 \text{ gallon}/ft^3) - 5912.6 \text{ gallon}$

REQ'D CONTAINMENT = 5500 gallon

ACTUAL = 5913 gallon

OK

USE 3'-3" HIGH WALL & 1" FLOOR SLOPE

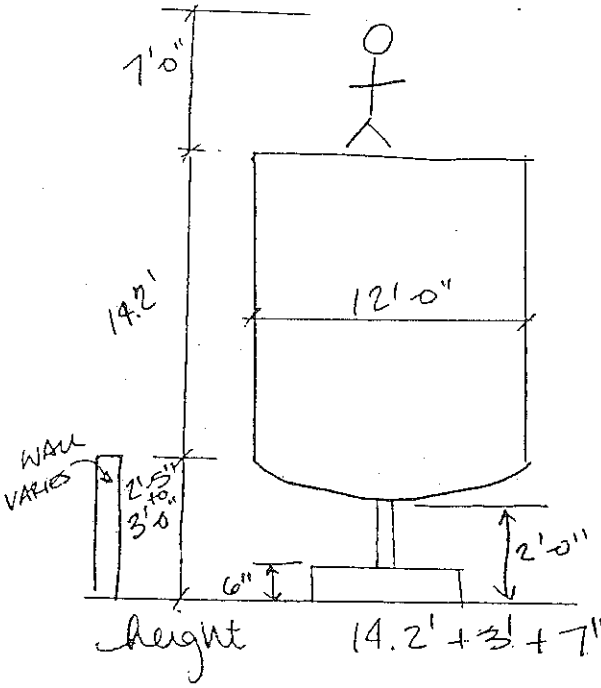
TANK FARM CONTAINMENT VOLUME CALCULATIONS

Sheet 1 of 2

TANK FARM - CONTAINMENT VOLUME

12000 gallon tank 12'-0" ϕ tank.

TANK HAS DISHED BOTTOM & FLAT TOP



$\frac{1 \text{ gallon}}{12000 \text{ gallon}} = \frac{.13378 \text{ ft}^3}{X}$

$X = 1605.4 \text{ ft}^3$

12' ϕ = $A = \pi(6)^2 = 113.1 \text{ ft}^2$

tank height $\frac{1605.4}{113.1} = 14.2'$

height 14.2' + 3' + 7" = 24.2' BUILDING HEIGHT CLEAR (approx.)

CONTAINMENT REQUIREMENTS

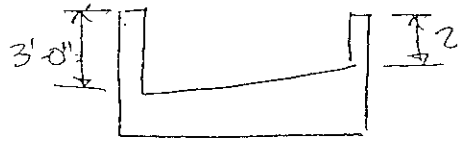
ONE TANK OR 10% OF TOTAL

ONE TANK = 12000 gallons ← governs. 10% = 4800 gallons

VOLUME

38' x 38' x 3' = 4332 ft³
- (.5' x 2' x 2')(16) = 32 ft³
- .58"(40')(40')(.5) = 464 ft³
383 ft³

for pads - tank.
for slope - assumes 1/8"/FT
7.1" drop



STAIR PAD -(3' x 1' x .5') = - 1.5 ft³
STAIR PADS -(4)(1' x 1' x .5) = - 2.0 ft³
3832.5 ft³